REPORT RESUMES

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STUDENTS AND COLLEGES--NEED-PRESS DIMENSIONS FOR THE DEVELOPMENT OF A COMMON FRAMEWORK FOR CHARACTERIZING STUDENTS AND COLLEGES. FINAL REPORT.

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THE NATURE OF THE INTERACTING RELATIONSHIP BETWEEN PERSONALITY CHARACTERISTICS OF COLLEGE STUDENTS AND ENVIRONMENTAL CHARACTERISTICS OF THE INSTITUTIONS THEY ATTEND WAS EXPLORED. STUDENT PERSONALITY WAS MEASURED FOR SAMPLES FROM 55 COLLEGES AND UNIVERSITIES BY THE ACTIVITIES INDEX, AN INSTRUMENT DESIGNED TO MEASURE PERSONALITY NEEDS. PRESS, CONSIDERED A MEASURE OF ENVIRONMENT, WAS MEASURED BY THE COLLEGE CHARACTERISTICS INDEX. SCORES SUMMARIZED FOR THE STUDENTS IN THE SAMPLES FOR EACH COLLEGE PROVIDED A PICTURE OF STUDENT PERSONALITY AND THE ENVIRONMENTAL CHARACTERISTICS OF THE INSTITUTION. THE PERSONALITY AND ENVIRONMENTAL SCORES FOR THE 55 SCHOOLS WERE INTERCORRELATED AND FACTOR ANALYZED. THE RESULTING FACTORS INDICATED THAT THERE WERE FIVE DIMENSIONS REPRESENTING THE INTERACTION OF STUDENT PERSONALITY AND INSTITUTIONAL ENVIRONMENT. THE FIVE FACTORS, REFERRED TO AS CULTURES, ARE (1) SELF-EXPRESSION, (2) INTELLECTUAL, (3) NUTURANT, (4) VOCATIONAL, AND (5) COLLEGIATE. THE COLLEGES WERE RESCORED IN TERMS OF THE FIVE FACTORS AND THE RESULTS FURTHER ANALYZED. INSTITUTIONS ARE CLEARLY IDENTIFIABLE AND DIFFERENTIABLE ON THE BASIS OF THE FACTORS EXTRACTED IN THIS STUDY. WHEN EXAMINED ACCORDING TO THE PERSONALITY AND ENVIRONMENTAL COMPONENTS, PARTICULAR CHARACTERISTICS OF INSTITUTIONS MAY BE RECOGNIZED AS BEING CONGRUENT OR NOT CONGRUENT IN RELATION TO THE PERSONALITY CHARACTERISTICS OF STUDENTS. SUGGESTIONS FOR FURTHER RESEARCH IN THE AREA OF PERSONALITY AND ENVIRONMENTAL CONGRUENCE WERE MADE. (TC)

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Syracuse University
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CHAPTER I

INTRODUCTION

The idea that human behavior be considered as the outcome of the relationship between individual personality and the social environment in which it takes place is not a revolutionary one. This assumption underlies much of the contemporary work in the behavioral sciences.

The general agreement which supports this assumption has led to relatively few attempts to adapt it to contemporary research. However, pleas have been made for systematically incorporating personal characteristics and situational variables within a single framework.

Inkeles, in sketching the development of sociology, notes that there has been a minimal concern with personality variables. It is Inkeles' thesis that a greater understanding of behavior will be found by considering personality and environmental variables in a combined form.

> Indeed we may be explaining only a very small part of the variance, since the combined impact of personality and structural variables may produce effects far more massive than might be suggested by a single additive approach to the two "independent variables" (Inkeles, 1959, p. 256).

Sells points out that ". . .all theorists appear to agree that behavior, even at the most primitive level, represents the result of some form of mediated transaction between organism and environment (Sells, 1963b, p. 696). He suggests that one has questioned this 'principle of interaction' (Sells, 1963b, p. 696). In tracing the use of environmental measures in psychological research he states that:

> Although individual experiments have been cited in which variance attributable to personal variables, situation (stimulus) variables, and interaction have been analyzed, they have been confined to single, or at best, small numbers of variables and have fallen far short of accounting for any major portion of total variance (Sells, 1963b p. 700).

Inkeles and Sells agree then that the explanation of behavior may be furthered by utilizing the principle of interaction as enunciated by Sells. Yet for Sells the obstacle has been in the domain of environmental variables.

> The most obvious need in evaluating the manifold encounter of organism and environment is a more satisfactory and systematic conceptualization of the environment. This implies a taxonomic dimensional analysis of stimulus variables comparable to the trait systems that have been developed for individual difference variables (Sells, 1963b, p. 700).

The research tactic appropriate for this type of analysis has been presented in several forms. Lewin's dictum

$B = f(P,E)$ was an early statement of the necessity for understanding behavior as an outcome of the relationship between the person and the environment (Lewin, 1938; Stern, 1964a). Although contemporary behavioral science research does not share the geometric aspects of Lewin's particular conceptualization of personality and environment, the strategy suggested in his formulation continues to be important. At the same time that Lewin stated his position regarding the relationship between behavior, personality and environment, H. A. Murray, working at the Harvard Psychological Clinic, proposed an approach to examining behavior by using parallel taxonomic constructs describing the personal and environmental parts of Lewin's statement (Murray, 1938). Murray suggested need and press as the constructs to describe the person and his environment. Although Murray made limited use of the constructs in a joint form they have provided the basis for extensive studies of the personality dimensions of college students and the environmental dimensions of the organizational setting within which they operate.

In research in higher education there have been few attempts to deal with variables describing both the personal characteristics of students and the situational aspects of the colleges which they attend. The Jacob report and the critiques which it suggested have noted that it is necessary to understand students and their institutions in terms of more than an assessment of their personal characteristics and selected aspects of the institutions that they attend (Jacob, 1957; Barton, 1959; & Riesman, 1958). One of the few examples of this type of research has been carried on by Stern and others.

The need-press taxonomy suggested by Murray has been adapted by Stern *et al*. for use in studying students and their colleges (Stern, Stein & Bloom, 1956). This work has extensively explored dimensions of student personality characteristics and the characteristics of the institutions that these students attend.

The development of the *Activities Index* (AI), a personality inventory devised to measure personality needs along a modified version of the framework suggested by Murray, and the *College Characteristics Index* (CCI) and a group of related inventories[1] designed to measure environmental press in terms congruent to the personality dimensions of the AI, has been described in various sources by Stern (Stern, 1963b; Pace & Stern, 1958). The most recent and complete summary is to be found in Studies of College Environments (Stern, 1966b).

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[1] High School Characteristics Index, Evening College Characteristics Index, Organizational Climate Index.

Stern has provided a summary of AI-CCI data describing the psychological characteristics of students attending different types of colleges and of the college environments themselves (Stern, 1963a, 1965). Students attending independent liberal arts colleges, for example, exhibit strong intellectual needs scores and low needs for emotional expression. They may be contrasted with students attending denominational colleges, who are characterized by lower intellectual needs and higher scores in areas involving dependency, orderliness and group participation. Need patterns of students in business administration, engineering, and teacher training programs are similarly unique and different from one another as well as from those of the liberal arts college students, both independent and denominational. These data provide a basis for the conclusion that there are, in fact, marked personal differences between collectivities of students who are to be found in different types of organizational settings.

Differences between these settings are reflected in student response to the College Characteristics Index. Independent liberal arts colleges have high scores on a number of factors associated with the intellectual climate of an institution and low scores in the nonintellectual areas. On the other hand, university affiliated liberal arts programs and denominational colleges reflect lower intellectual climate scores and an emphasis on nonintellectual factors specific to each type of school: Organizational and group participation in the case of the denominational school, play in the case of the universities. Engineering, teacher training and business administration programs also show lower intellectual climate scores, the last of these being particularly low.

A considerable body of previous research has centered on the description of student body personality needs as measured by the AI and the institutional press as described by the CCI. These inquiries have dealt with intra-institutional differences, as illustrated in the elaboration of need and press differences within academic subdivisions of a large university, or with the differences between institutions on particular need or press characteristics, as illustrated above (Stern, 1962).

To date there have been only a few attempts to describe the joint need-press interaction as suggested by Murray and Lewin, and more recently by Barton, by Brunswick, and by Inkeles and Levinson (Murray, 1938; Lewin, 1938; Barton, 1959; Brunswick, 1956; Inkeles & Levinson, 1963). One of the few efforts that have been leading back to Lewin's $B = f(P,E)$ statements is to be found in the work of Stern. Stern has cast his work in terms of Lewin's formulation, and this provides the basis for the study to be described below (Stern, 1964a). He suggests that the need and press measures are applicable to the P (person) and E (environment) aspects of Lewin's formula, and that this may be the basis for an expansion of the analysis along lines suggested by Lewin.

The present study is based on this work and will analyze need-press data collected during the course of research on students and colleges that has taken place over the past few years. Fifty-five colleges, universities, and university divisions, representing most of the types of institutional organization found in American higher education have been described by students responding to the CCI. Students at these institutions have also described themselves, in terms of personality needs, by responding to the AI. Institutional means for the AI and CCI represent composit pictures of the students and the institutions. These scores will be intercorrelated. The interrelationships of the need and press variables will be factor analyzed in an attempt to discover the dimensions and properties of a joint need-press relationship. The original data will then be reanalyzed in terms of the new dimensions. The use of the new dimensions as descriptive categories will be explored.

A sample of 1076 students, from twenty-three colleges, have been matched for AI and CCI responses, and provide another set of data for the discussion of the results obtained. This set of data permits more extensive analyses since within school differences may be discovered, a situation not possible in the fifty-five school sample based only on institutional summary data.

The goals of this study are exploratory. In searching for joint personality and situational dimensions of the university there are two aims. The first is that of discovering something about the nature of the research strategy used here: its implications and limitations. The second aim deals with the social setting of the research. Colleges and universities have recently been cast as the devils and/or saviors of

American society. Although they serve as the setting for the study of the rest of the world, relatively little is known about them. It is our hope to make this gap a little smaller.

CHAPTER II

STUDENTS AND COLLEGES: A REVIEW OF THE LITERATURE

The college as a social organization has been studied from a number of vantage points. The novels of McCarthy, Malamud and Snow provide descriptions of the events of academic life in imaginary but not unrecognizable colleges and universities (McCarthy, 1963). The observations of Boroff, and of Riesman and Jencks have been written in an attempt to grasp the complexities of university life through reports based upon personal experience and observation (Boroff, 1957; Riesman, & Jencks, 1962). Anthropologists such as Bushnell have made ethnographic studies of American colleges in much the same way they study any exotic culture (Bushnell, 1962). Sociologists and psychologists have turned the analytic tools of their respective fields upon higher education (Sanford, 1962).

There are several significant reasons for the academic interest in higher education. Trow, before discussing student cultures, provides an explanation.

> Why should any of us be interested in student cultures? Well, one reason is that they are interesting in themselves. Student subcultures have a peculiar fascination for many academic men, something like the

> fascination of the exotic which takes anthropologists to remote jungles to study the rich and unfamiliar social systems flourishing there. Part of the fascination, but only part, is that if we look we may see ourselves as we once were; and not only ourselves as we were, but as we might have been if only we had gone to another college, or studied different subjects, or been wiser or more gifted in this way or that (Trow, 1960, p. 5).

Most higher education research may be characterized by the limitations of its focus. The interest of many researchers has been, for the most part, confined to examining a particular segment of the teaching methods employed, or the curriculum, or a particular classroom. The bibliography of the Jacob report is a compendium of such research, and is worth noting for this reason alone (Riesman, 1958). The conclusion of the report is, however, of more importance. After examining much of the available research Jacob concluded that there was little evidence that curriculum, course offerings, teaching methods, or faculty, when examined as independent phenomena, had any affect on changing the values of students at a college or university. Jacob suggested that any change in student values must be attributable to the total atmosphere or climate of a particular institution rather than any selected aspect (Riesman, 1958).

Newcomb's Bennington study demonstrated that marked changes took place in the values and attitudes of Bennington students. Newcomb's results, in light of the Jacob report, are well worth noting. Newcomb recognized that it was not any _one_ aspect of Bennington College which led to changes in values of the students, but interpreted his findings in terms of the _total_ atmosphere of the college (Newcomb, 1943). In addition to the introduction of new values, there was continuing support for the new values from the students and the faculty.

Barton, in reviewing the Jacob report, notes that the material surveyed by Jacob is limited insofar as the areas of college life that are studied (Barton, 1959). The Jacob report deals largely with general education in the social sciences, ignoring most other aspects of campus life. Yet Jacob did see that the variables effecting student values were interrelated and more complex than the studies he reviewed would indicate. Jacob introduced the concept of institutional climate and included a discussion of the prevailing sentiments of upperclassmen and the student leaders on the college community. This broadens the range of college activities considered yet still provides a view of the college setting limited to only a few additional dimensions.

The study of college experience as an influence on the values of students must, according to Barton, ". . .encompass the whole network of factors immediately influencing the students: the faculty, various strata of other students, and other adults with whom students and especially student leaders come in contact"(Barton, 1959, p. 61). Barton feels that higher education must be recognized as a combination of interacting elements drawn from several facets of the situation. The critical aspects of this type of research are to be found in distinguishing between different types of colleges, and the effect that varying educational experiences have on different types of students (Barton, 1959, p. 63).

The organizational aspects of higher education that have been examined are worth looking at, if only to give an idea of what must be considered if one is to describe the complexity of the college as a social organization.

College faculties were examined in the wake of the McCarthy era by Lazarsfeld and Thielens (Lazarsfeld and Thielens, 1958). They collected interview data from a sample of over two thousand social scientists in 165 colleges and universities. They found that faculty members who tended to be conservative politically as well as intellectually were more likely to orient themselves toward their own institution rather than toward their profession. Similarly, Gouldner described college faculty members in terms of whether they were "locals" or "cosmopolitans", a reference to institutional or professional orientation (Gouldner, 1957). Yet neither study related the effect of two significantly different orientations to students and the effect it might have on higher education.

Caplow and McGee studied several aspects of employment practices in higher education, including the intellectual orientations of faculty members (Caplow & McGee, 1961). They, like Gouldner, assessed professors in terms of a local or a wider professional orientation, but did not speculate on the relationship between such an orientation and the effect upon the intellectual life of the students.

The organization and administration of higher education has by now recovered from the vitriolic attacks of Veblen and Sinclair (Veblen, 1918; Sinclair, 1923). Both authors viewed the early twentieth century domination of higher education by business interests as contradictory to free inquiry and intellectual life. They attacked the financial control and subsequent domination of higher education by those whose interests were not necessarily intellectual. Yet the impact of such control on student experience is not clearly seen in these or most subsequent studies.

A closer study of the relationship between institutional experience and student life may be drawn from Goffman (Goffman, 1961). He introduces the concept of total institution, and describes the devastating effects particular kinds of institutional experience have for mental patients. The effect is not unlike the portrayal of cadets at the military institution described by Dornbusch (1955).

The relationship between student culture and college administration has been described by Becker and Geer (1961). Students at the medical school they studied are seen to develop cultural patterns which accommodate their own resources and mediate them with the curricular demands of the faculty.

Each of these studies adds to the information available about the particular aspect of college organization examined, or about the total picture of one unit of higher education. The suggestions for dealing with more of the total complex of institutional life have not been fully followed.

Other forms of social organization have been examined in much the same way as the colleges. Although many of these studies have attempted to describe the institutional environment and the individuals within it in a related fashion they have not been notably successful, at least according to the strategy being suggested in this study.

Gouldner describes the workings of an industrial organization, and Blau contrasts bureacracies differentiated by degree of authoritarian control (Gouldner, 1954; Blau, 1955). Selznick's picture of the Tennessee Valley Authority provides descriptive information concerning a large and powerful organization (Selznick, 1949). Lipset, Trow and Coleman describe the workings of a union and Stanton and Schwartz provide information concerning the relationship between the social setting and the treatment of mental patients (Lipset, Trow & Coleman, 1956). Similarly Caudill relates the effect of a particular mental institution to therapeutic success for the patients (Caudill, 1958).

Each of these studies provides some clues to the workings of the organization under study, but the research reports are not presented within a framework that would make observations comparable from one situation to another. It is difficult to attempt a comparison of a particular institutional characteristic from one research study to another. This difficulty would be reduced, at least in part, if some satisfactory conceptual scheme were used to describe institutional features of concern to researchers. One attempt has been made in this direction. Argyris suggests that organizational behavior be examined in light of its two components: the individual and the formal organization (Argyris, 1957, p. 229).

As the characteristics of institutions have been examined, so too have the characteristics of their participants. In the case of the college student a summary of research may be found in The American College (Sanford, 1962). This volume contains research reports on students, as well as institutions. Brown, Summerskill, Fishman, and others have examined student characteristics and their relationship to achievement, student attrition, and occupational choice (Brown, 1962; Summerskill, 1962; Fishman, 1962). Elsewhere, attempts have been made to relate particular characteristics of students to selected facets of college life (Barton, 1961).

There has not been an attempt to relate systematically personal and environmental characteristics along the lines suggested by Lewin and the others cited earlier. What they have suggested is a systematic representation of the variables of individual characteristics in terms congruent with the representation of environmental characteristics. The problems in doing so have been outlined by Forehand and Gilmer (1964). In a review of the literature dealing with the treatment of organizational variables in contemporary research they point out the difficulties of such an endeavor. They note the few attempts that have been made, but also show their limitations.

Inkeles and Levinson note that social behavior, nearly all of which takes place within some institutional context, can be understood best in terms of the relationship between personal attributes and environmental characteristics (1959). The type of analysis that they suggest is similar to that which will be utilized in the present study. For an understanding of the social psychology of organizational life Inkeles and Levinson recognize that three aspects must be considered. They are the social psychological conception of the individual, the social psychological conception of the organization, and an understanding of the links between the person and the organization (1959).

Sells has pointed out that the grand conceptual scheme called for by Parsons and Shills, which incorporates action, personality and social system is little more than a ". . .strategy in need of implementation" (Sells, 1963a, p. 5; Parsons & Shills, 1951). Elsewhere Sells notes that

> the most obvious need is for the development of a taxonomy and measurement technology of variables describing the stimulus situation. However, unsatisfactory they may be regarded, at least some generally accepted taxonomy and devices for measuring individual behavior characteristics have been produced by psychology. As a result it is possible, with varying degrees of accuracy, depending on the particular variables and measures employed, to account for individual differences in significant ability and personality dimensions. But no comparable dimensions of the stimulus situation have been systematically studied (Sells, 1963a, p. 700; 1963b).

In order to overcome some of the limitations of previous research a particular strategy has been adopted. As suggested by Lewin and Sells, and others, we are going to consider the person and the environment in similar terms. These two dimensions, assumed to be determinants of behavior within some form of social organization, will be jointly considered in an effort to supply an empirical referent to Lewin's B = f(P,E) formulation. The adaptation of a particular technique for distinguishing the person and the environment and its relationship to Lewin's statement has been described by Stern (1964a).

The next chapter will deal with the measurement of need and press, or the person and the environment. Following chapters will include a discussion of the relationship between person and environment, the application of this particular tactic to research on colleges and students, and the implications of such research.

CHAPTER III

THE MEASUREMENT OF PERSONALITY AND ENVIRONMENT

Although there are any number of ways in which personality may be measured, there are only a few techniques for measuring environmental dimensions. Furthermore there is only one which provides for the measurement of both systems in comparable terms. Murray's need-press constructs provide a taxonomic framework for considering personality and environment within a parallel conceptual scheme (Murray, 1938).

Needs

Murray originally defined a need as:

> . . . a construct. . .which stands for a force (the physiochemical nature of which is unknown) in the brain region, a force which organizes perception, apperception, intellection, conation, and action in such a way as to transform in a certain direction an existing, unsatisfying situation (Murray, 1938, p. 124).

The physiological characteristics of needs have never been given serious consideration, and more recently Murray described the concept of need as a ". . .nonobservable construct. It is a state. . .characterized by the tendency to actions of a certain kinds"(Murray, 1951, p. 436).

Stern has pointed out two significant aspects of Murray's formulation of the need construct (Stern, 1962, p. 28). Needs are related to the goals of an individual, and a taxonomy of needs is a list of the objectives, realized in interaction processes, sought by the individual. Further, needs are recognized as hypothetical constructs and must be inferred from the observation of individual behavior.

Indirect sources for estimating interaction characteristics of individuals include interviews, observations, and projective measures. The simplest indirect technique is based on preferences an individual may make for verbal descriptions of possible activities. The *Activities Index*, described below, is based on this technique.

Press

Murray suggested press as the concept which described those aspects of the environment significant in determining behavior (1938, p. 40). Those features of the environment apparent to an objective observer, the alpha press, were distinguished from the beta press, the subject's own interpretation of the situation (Murray, 1938, p. 122).

However, alpha press is void of the interpretation of the subject, an important aspect in eliciting behavioral response. Beta press is the private world, as interpreted by the subject, and explicable only through extensive communication with the subject. Stern, Stein and Bloom have suggested that it is the common beta press ". . .representing the perceptions and meaning which are shared by a given group of individuals. . ." which is the crucial component of the environment for understanding behavior within the context of a particular organizational setting (Stern, Stein & Bloom, 1956, p. 37). The press description, as included in the College Characteristics Index is designed to provide the external counterpart of personality needs (Stern, 1964a, p. 165).

The Syracuse Need-Press Indexes

The Syracuse Indexes are 300 item questionnaires designed to measure thirty need or press variables. The thirty variables and their definitions are:

1. Abasement--Assurance: self depreciation versus self-confidence.
2. Achievement: striving for success through personal effort.

3. Adaptability--Defensiveness: acceptance of criticism versus resistance to suggestion.

4. Affiliation--Rejection: friendliness versus unfriendliness.

5. Aggression--Blame Avoidance: hostility versus its inhibition.

6. Change--Sameness: flexibility versus routine.

7. Conjunctivity--Disjunctivity: planfulness versus disorganization.

8. Counteraction--Inferiority Avoidance: restriving after failure versus withdrawal.

9. Deference--Restiveness: respect for authority versus rebelliousness

10. Dominance--Tolerance: ascendancy versus forebearance.

11. Ego Achievement: striving for power through social action.

12. Emotionality--Placidity: expressiveness versus restraint.

13. Energy--Passivity: effort versus inertia.

14. Exhibitionism--Inferiority Avoidance: attention-seeking versus shyness.

15. Fantasied Achievement: daydreams of extraordinary public recognition.

16. Harm Avoidance--Risktaking: fearfulness versus thrillseeking.

17. Humanities, Social Science: interests in the Humanities and the Social Sciences.

18. Impulsiveness--Deliberation: impetuousness versus reflection.

19. Narcissism: vanity.

20. Nurturance--Rejection: helping others versus indifference.

21. Objectivity--Projectivity: detachment versus superstition (A1) or suspicion (E1).

22. Order--Disorder: compulsive organization of details versus clarelessness.

23. Play--Work: pleasure-seeking versus purposefulness.

24. Practicalness--Impracticalness: interest in practical activities versus indifference.

25. Reflectiveness: introspective contemplation.

26. Science: interests in the Natural Sciences.

27. Sensuality--Puritanism: interest in sensory and esthetic experiences versus austerity, or self-denial.

28. Sexuality--Prudishness: heterosexual interests versus their inhibition.

29. Supplication--Autonomy: dependency versus self-reliance.

30. Understanding: intellectuality.

Each variable serves a double purpose. The achievement variable, for example, refers to winning success through effort. As a personal characteristic measured by the Activities Index it is recognized in the behavior of a person who enjoys competition, has high standards for himself in whatever he does, and plays to win rather than for the sake of the game. The corresponding situational aspect of achievement, measured by the College Characteristics Index, would be reflected in the existence of tutorial and honors programs, advanced placement opportunities, extensive out of class preparation requirements, and the absence of "snap" courses.

Properties of the Indexes

Table 1 summarizes reliability and item discrimination measures for the scales of the AI and the CCI. The AI scale reliabilities range from .40 to .88, with the average reliability = .65. Item discrimination values, reflecting internal consistency, range from .27 to .81, and average .57 for the AI. CCI item discrimination ranges from .43 to .66 with the

Table 1[a]

AI-CCI Psychometric Properties

Scale	Reliability [K-R Formula 20]		Item Discrimination [Ebel]	
	AI[b]	CCI[c]	AI[b]	CCI[c]
1	51	67	42	51
2	73	81	60	66
3	64	58	58	48
4	81	69	66	47
5	69	72	59	56
6	67	44	57	47
7	70	72	58	54
8	66	50	57	45
9	56	60	50	50
10	77	57	62	49
11	80	58	70	50
12	64	56	53	48
13	40	70	41	54
14	75	57	65	49
15	72	40	57	43
16	67	70	62	51
17	83	77	65	60
18	64	50	50	45
19	71	74	58	58
20	73	70	57	54
21	56	70	27	51
22	82	59	74	45
23	71	75	56	58
24	74	69	59	53
25	68	76	54	60
26	88	77	81	58
27	53	80	43	62
28	78	71	64	53
29	67	34	52	43
30	74	75	58	54

[a] from Stern (1962, p. 33) [decimal points omitted]

[b] based on 1078 upperclassmen from 32 schools

[c] based on 1993 upperclassmen from 32 schools

average = .52. Stern has noted that the average reliability is close to the maximum for scales of ten items. The relatively high item discrimination values indicate that the content of the scales is homogeneous (Stern, 1961, p. 707).

A summary of research surrounding the indexes has indicated that the AI items are resistent to faking, and that the social desirability of the AI items is relatively homogeneous. The relationship between need characteristics and overt behavior has been explored in the areas of academic performance, study habits, reading skills, deviant behavior, and in terms of teacher personality processes (Stern, 1963a, p. 7).

CCI research has indicated that press profiles from student samples are consistent with the views of National Merit Scholars and with the perceptions of faculty and administrators from the same institutions. The proportion of agreement to items reflecting subjective and impressionistic aspects of the environment is similar to that for items verfiable by empirical observation (Stern, 1963a).

Because press is used here as the external counterpart of need, it is important to explore the relationship between the need responses of an individual and his press response. The appropriate question to ask is whether or not the instruments are measuring the same or different phenomena. McFee has explored the question of independent estimates of need and press (McFee, 1961). Her study dealt with the intercorrelations of matched responses of 100 students for scales of matched names. The intercorrelations ranged from -.007 to .057 (McFee, 1961, p. 27). Stern has investigated the intercorrelations between the thirty need scales and the thirty press scales across a sample of 1076 students from twenty-three colleges (Stern, 1962, pp. 48-49). The average interscale correlation was .0786. It is apparent from these studies that the description the student provides of himself is independent of the description he provides for his college.

Further evidence of the independence of the need and press dimensions is provided in an analysis by Saunders which is also reported by Stern (Saunders, n.d., Stern, 1966b). A covariance matrix based on the interrelationships between the AI scales and the CCI scales was factor analyzed and yielded twelve need factors and eleven press factors. The same need factors had been evident in an earlier analysis based on the AI scales alone. The factor analysis, although based on a need-press matrix for scores taken across a sample of individuals, yielded independent need and press factors, further supporting the conclusion that there is no relationship between students' descriptions of themselves and the descriptions they provide of their colleges.

The analysis just discussed was a principal components analysis, rotated according to the normal equamax criteria described by Saunders. A complete description of the results of this analysis is provided by Stern (1966b, pp. 60ff).

In addition to providing support for the independence of the personality and environmental dimensions measured by the _Activities Index_ and the _College Characteristics Index_ the analysis also served to establish the factor structures of the two instruments. On the basis of this analysis twelve personality factors and eleven environmental factors were defined. They are discussed below (Stern, 1963b).

Personality Factors--Activities Index

I. _Intellectual Orientation._

This dimension consists of five factors. Two of these involve, as might be expected, intellectual interests and achievement motivation. Two others are concerned with the maintenance of a high level of intellectual and social aggressiveness, suggesting that intellectuality is partially a function of ego strength. The last of these five factors is based primarily on items reflecting an interest in the development of useful, applied skills.

Factor 1. Self-Assertion. This factor reflects a need to achieve personal power and socio-political recognition. It is based on items which emphasize political action, directing or controlling other people, and the acceptance of roles involving considerable group attention. The scales involved are: Ego Achievement, Dominance, Exhibitionism, Fantasied Achievement.

Factor 2. Audacity-Timidity. The second factor is more personally than socially oriented. The emphasis here is on aggressiveness in both physical activities and in interpersonal relationships. It is of interest that this personal aggressiveness should also be associated with a high level of interest in science. The scales involved are: Risktaking, Fantasied Achievement, Aggression, Science.

Factor 3. Intellectual Interests. The factors with the highest loadings in this dimension are based on items involving various forms of intellectual activities. These include interests in the arts as well as the sciences, both abstract and empirical. The scales involved are: Reflectiveness, Humanities-Social Sciences, Understanding, Science.

Factor 4. Motivation. This factor, like 1 and 2 above, represents another form in which need achievement may be expressed. Here, however, are the more conventional forms of striving most recognizable among students, involving elements of competitiveness and perseverance as well as of intellectual aspiration. The scales involved are: Achievement, Counteraction, Understanding, Energy.

Factor 5. Applied Interests. A high score on this factor suggests an interest in achieving success in concrete, tangible, socially acceptable activities. The items involve orderly and conventional applications in business and science. The scales involved are: Practicalness, Science, Order.

II. Dependency Needs.

This dimension is based on seven factors. It starts with the orderly aspects of Applied Interests, carries these to a more explicitly compulsive level of personal organization, and then shades off into Submissiveness. This in turn, when shorn of its more self-abasive qualities, becomes reconstituted in the last factor of this dimension as emotional

Closeness. A high score suggests a generally high level of dependent, submissive, socially-controlled behavior. A low score represents the inverse of this: autonomy, ascendance, and non-conformity.

Factor 5. Applied Interests. See area 1 above.

Factor -11. Constraint-Expressiveness. This is the inverse of Factor 11 in area III below. Moderately high scores suggest guardedness and emotional constriction. Extreme scores are likely to be associated with high levels of inhibition, defensiveness and rigidity.

Factor -12. Diffidence-Egoism. Reversed scores on Factor 12 (see area III below) reflect a lack of preoccupation with the self as a source of gratification. This implies good contact and reality testing, although very high scores may perhaps be associated with a tenuous, underdeveloped ego structure and a vague or obscurely-defined self-concept.

Factor 6. Orderliness. People with high scores on this factor have indicated a marked interest in activities stressing personal organization and deliberativeness. Although some of the items are concerned with long range planning and relatively high level time perspective, the major emphasis here is on the maintenance of ritual and routine and the avoidance of impulsive behavior. The scales involved are: Conjunctivity, Sameness, Order, Deliberation.

Factor 7. Submissiveness. The preceding factor suggests a strong defensive system, based on rigid internal controls, for guarding against the expression of impulses. The submissiveness factor also implies a high level of control, but one which is based on social conformity and other-directedness. The items emphasize humility, deference, getting along with others, keeping in one's place, etc. It is of interest that the Nurturance scale items should appear in this context, suggesting that the submissive individual's interest in supportive activities is based to a considerable extent on his own unexpressed need for such help. The scales involved are: Adaptability, Abasement, Nurturance, Deference.

Factor -2. Timidity-Audacity. This is the inverse of Factor 2 described previously under Intellectual Orientation. In its reversed form it suggests a concern with any risk of danger to the self, whether physical, psychological, or social. These people avoid sports, social activities, and even fantasies which might conceivably incur harm or blame.

Factor 8. *Closeness*. This factor is closely related to Factor 7, with which it shares both the Nurturance and Deference scales. However, the abasive and self-denying qualities implicit in Factor 7 are absent here. In their place is an acceptance of items which recognize one's needs for warmth and emotional supportiveness. The scales involved are: Supplication, Sexuality, Nurturance, Deference.

III. *Emotional Expression*.

This dimension shares the Closeness factor with the preceding area, but the remaining five factors with loadings on this dimension stress much higher levels of social participation and emotional spontaneity. The last one of this group, Self-Assertion, is shared with the intellectual area, thus bringing the circle to a close.

Factor 8. *Closeness*. See area 11 above.

Factor 9. *Sensuousness*. The thirty items associated with this factor are concerned with activities of a sensual character. The items suggest a measure of self-indulgence along with a delight in the gratifications which may be obtained through the senses. The scales involved are: Sensuality, Narcissism, Sexuality.

Factor 10. Friendliness. Persons with high scores on this factor are indicating an interest in playful, friendly relationships with other people. These interests involve simple and uncomplicated forms of amusement enjoyed in a group setting. The scales involved are: Affiliation and Play.

Factor 11. Expressiveness-Constraint. This factor stresses emotional lability and freedom from self-imposed controls. Individuals with high scores on this factor are outgoing, spontaneous, impulsive, and uninhibited. The scales involved are: Emotionality, Impulsiveness, Exhibitionism, Sexuality.

Factor 12. Egoism-Diffidence. This factor reflects an extreme preoccupation with self. The items are concerned with appearance and comfort, as well as with fantasies in which the self obtains unusually high levels of gratification. The responses to other items in this group suggests that reality itself is interpreted in egocentric terms, but this may be not so much a matter of autistic distortion as of narcissistic egoism. The scales involved are: Narcissism, Fantasied Achievement, Projectivity.

Factor 1. Self Assertion. See area 1 above.

College Environment Factors--College Characteristics Index

The Intellectual Climate

The eight CCI factors involved here appear to be based on the more conventional aspects of the academic program, including 1) staff and facilities, 2) standards of achievement set by students as well as faculty, and 3) opportunities for becoming involved in broader social processes and developing self-assurance and leadership skills. In addition to these three the intellectual climate is also marked by 4) non-custodial student personnel practices, and 5) an absence of vocationalism. The eight factors contributing to the Intellectual Climate are:

Factor 1. Aspiration Level. A high score on this factor indicates that the college encourages students to set high standards for themselves in a variety of ways. These include opportunities for students to participate in decision-making processes involving the administration of the school, and administrative receptivity to change and innovation, thus implying that a student's efforts to make some impact on his environment have some probability of being successful. But a high level of aspiration is also encouraged by introducing students to individuals and ideas likely to serve as models of intellectual and professional achievement. The scales involved are Counteraction, Change, Fantasied Achievement, Understanding.

Factor 2. Intellectual Climate. All of the various items contributing to this factor reflect the qualities of staff and plan specifically devoted to scholarly activities in the humanities, arts, and social sciences. The scales involved are Reflectiveness, Humanities-Social Sciences, Sensuality, Understanding, Fantasied Achievement.

Factor 3. Student Dignity. This factor is associated with institutional attempts to preserve student freedom and maximize personal responsibility. Schools with high scores on this factor tend to regulate student conduct by means other than legislative codes or administrative fiat. There is a minimum of coercion and students are generally treated with the same level of respect accorded any mature adult. The scales involved are Objectivity, Assurance, Tolerance.

Factor 4. Academic Climate. This factor stresses academic excellence in staff and facilities in the conventional areas of the natural sciences, social sciences, and the humanities. The scales involved are Humanities-Social Sciences, Science.

Factor 5. Academic Achievement. Schools high in this factor set high standards of achievement for their students. Course work, examinations, honors, and similar devices are employed for this purpose. The scales involved are Achievement, Energy, Understanding, Counteraction, Conjunctivity.

Factor 6. Self-Expression. This factor is concerned with opportunities offered to the student for the development of leadership potential and self assurance. Among the activities serving this purpose are public discussion and debates, projects, student drama and musical activities, and other forms of participation in highly visible activities. The scales involved are Ego Achievement, Emotionality, Exhibitionism, Energy.

Factor -10. Work-Play. This is an inversion of Factor 10 (see Non-Intellectual Climate below). It reflects an absence of activities associated with dating, athletics, and other forms of collegiate play or amusement.

Factor -11. Non-Vocational Climate. This factor is also an inversion (see Non-Intellectual Climate below). In its reversed form the items reflect opportunities to engage in theoretical, artistic, and other "impractical" activities.

Other items imply an absence of expectation, coercion, or demands for student conformity to conventional values.

The Non-Intellectual Climate

This area shares the Self-Expression factor with the preceeding one. The three factors contributing most to this are connected with a high level of organization of student affairs, both academic and social. The remaining two factors are associated with student play and an emphasis on technical and vocational course.

Factor 6. Self-Expression. See Intellectual Climate above.

Factor 7. Group Life. The four scales on this factor are concerned with various forms of mutually supportive group activities among the student body. These activities are of a warm, friendly character, more or less typifying adolescent togetherness, but the items also reflect a more serious side to this culture as represented in activities devoted to the welfare of fellow students and less fortunate members of the community. The scales involved are Affiliation, Supplication, Nurturance, Adaptability.

Factor 8. Academic Organization. The various components of this factor may be regarded as the environmental counterparts of the needs for orderliness and submissiveness in the individual. High scores on this factor are achieved by institutions which stress a high degree of organization and structure in the academic environment. The scales involved are Blame Avoidance, Order, Conjunctivity, Deliberation, Deference, Narcissism.

Factor 9. Social Form. In some respects this factor represents the formal institutionalization of those activities represented in Factor 7 (Group Life). There is, in fact, considerable overlap between these two factors, but Social Form minimizes the friendly aspects of Group Life while stressing its welfare components. Schools characterized by this factor also offer opportunities for the development of social skills of a formal nature and in some respects suggest the finishing school counterparts of the vocational climate represented in Factor 11. The scales involved are Narcissism, Nurturance, Adaptability, Dominance, Play.

Factor 10. Play-Work. Schools high in this factor offer opportunities for participation in a form of collegiate life reminiscent of the popular culture of the 1920's. These are the institutions sometimes referred to as the fountains of knowledge where students gather to drink. The scales involved are Sexuality, Risktaking, Play, Impulsiveness.

Factor 11. Vocational Climate. The last of the non-intellectual factors is also shared with the Intellectual Climate area. The items of this factor emphasize practical, applied activities, the rejection of aesthetic experience, and a high level of orderliness and conformity in the students' relations to the faculty, his peers and his studies. The scales involved are Practicalness, Puritanism, Deference, Order, Adaptiveness.

The factor structure just described has served as the bases for the description of students at various types of colleges, and for descriptions of the colleges themselves. This research has been reported extensively by Stern elsewhere, and will be briefly summarized here (Stern, 1963a, 1965, 1966b).

Students attending independent liberal arts colleges may be characterized by high intellectual needs. This is not the case for students attending denominational or university affiliated liberal arts colleges. The students at the independent liberal arts colleges are also distinguished by their low scores on those factors involving personal needs for group activities. Students in specialized programs such as business administration, engineering or teacher training may be differentiated from liberal arts students. The business administration students, for example, tend to exhibit low intellectual needs scores and high scores in areas involving group activities. Engineers show high intellectual needs scores, with an emphasis on academic achievement rather than on intellectual pursuits as an end in themselves. Teacher training students show the lowest intellectual need scores, and have high scores in the areas involving involving group participation.

The descriptive data provided by students for their colleges demonstrate that significant differences exist in the way that the students perceive their institutions. The independent liberal arts colleges are seen by their students as providing an environment where intellectual activities are emphasized, including opportunities for student self expression, a view of student administration that tends to minimize the coercive aspects of student control, and the type of situation where high achievement standards are set for the students. University and denominational students do not see the same opportunities at their own institutions. The opportunities for self expression are considerably more limited, there are lower achievement standards and the general intellectual atmosphere is not emphasized as it is at the independent liberal arts colleges.

In the non-intellectual area an emphasis on group life, social organization and collegiate forms of play is found in the university affiliated liberal arts colleges and to some extent in the denominational schools. These aspects of higher education appear to be deemphasized by the independent liberal arts colleges. The specialized programs also tend to emphasize the non-intellectual aspects of college education, but not to the degree of the university affiliated liberal arts programs.

Stern has noted that other measures of the intellectual strength of colleges and universities are related to the dimensions covered by the CCI (Stern, 1963a, pp. 25-32). The schools with the strongest intellectual climate may be recognized as having greater financial resources, a better student-faculty ratio, better library facilities, and a higher score on the Knapp-Greenbaum index.

The students at schools with an outstanding intellectual climate may also be recognized as having higher achievement test scores, a greater proportion of them are National Merit Scholars, and more go on to complete the Ph.D. than is true of those attending schools with lower intellectual climate area scores.

The data to this point suggest that there is some form of congruence between types of institutions and the characteristics of the students which attend them. The remainder of this study is devoted to determining the relationship between student personality and institutional characteristics. In addition there will be a discussion of the implications of such dimensions in terms of further research.

CHAPTER IV

METHODS AND PROCEDURES

The research strategy that has been suggested, considering personality and environment variables jointly, raises several methodological problems. One problem is the necessity for conceptualizing and measuring the variables in comparable terms. Murray's taxonomy provides a set of constructs appropriate for this type of analysis. The *Activities Index* and the *College Characteristics Index* are instruments which employ this taxonomy. Joint dimensions describing student and institutional characteristics may be obtained by examining the relationship between summary measures of the personality characteristics of students and the environmental characteristics of their institutions.

It was noted in a previous section that if a sample of individual scores is intercorrelated the values of such correlations are very close to zero. This suggests that the phenomena being measured by the two instruments are, in fact, different. A respondent's description of the environment is not affected by his own personal needs.

Yet the summaries of the need and press dimensions presented earlier suggest that there are some relationships between the types of students found at particular kinds of colleges or universities. It is the task here to determine what those relationships are.

If measures summarizing personality and environmental characteristics of students at selected institutions are used, there are relationships between need and press variables. These summary measures may be taken in the form of mean scores for a sample of students at a group of institutions. Stern has noted that collective need and press scores reflect the objective personality and environmental characteristics of the students and their institutions (Stern, 1964a, pp. 166-167).

A second methodological problem concerns which level of variables for the two instruments, the scales or the factors, should be utilized in a study of this type. The interrelationships between the need and press dimensions may be observed in terms of the thirty original scales of each instrument, or the twenty-three factors extracted from them in the analysis described in the previous chapter. Each level presents its own set of problems and implications.

In the case of the scales one is dealing with the original variables of the instrument. There is no basis for assuming that the scales represent the most parsimonious representation of the need and press dimensions. It is possible that scales may overlap, and that the underlying dimensions measured by the instrument may be represented by a smaller number of variables. In fact, as the factor analysis described in the previous chapter showed, the two dimensions may be represented in terms of twelve and eleven factors, respectively.

The consideration of the variables at the factor level represents the outcome of the results of a data reduction technique. Through factor analysis the original thirty variables of each instrument were reduced to twelve personality and eleven environmental dimensions. Interpretable but non-essential common variance contained in the matrix of scale correlations for each instrument is omitted once the factors are defined. As noted in the description of that analysis the factor solution yields a meaningful and clearly interpretable set of dimensions. These variables may be used as the basis for the analysis being considered in this study.

In order to build a firmer basis for selecting either the scale level or the factor level analyses were carried out on both levels. The results, along with more extensive analyses of the level selected are presented in the following chapter.

The basic analysis, to be described next, was carried out on the sixty variable scale set as well as the twenty-three variable factor set. The analysis was based on a sample of fifty-five schools reported in Table 2. The representation of schools in the sample is based on the availability of data in the collection at the Psychological Research Center, Syracuse University. The data have been collected and utilized in earlier studies, and new data are added as they become available. Schools were included in the sample for this study if they met two criteria. The first was representation of scores on both the Activities Index and the College Characteristics Index. The second criteria was the availability of coding information which assured that all the respondents in the CCI sample were upperclassmen.

The restriction to upperclassmen resulted in the exclusion of some data, but was based on the results of other research dealing with the responses of freshmen to the CCI.

Table 2

Fifty-Five School Sample

School	Sample Type	AI N	CCI N
Antioch	Independent liberal arts	39	59
Arkansas	Engineering	32	55
Ball State	Teacher training	55	64
Blackburn	Denominational liberal arts	49	49
Buffalo State	Teacher training	37	38
Buffalo, Univ.	University liberal arts	30	31
Bryn Mawr	Independent liberal arts	49	68
Cincinatti	Engineering	48	69
Cincinatti	Business Administration	28	29
Cornell	Engineering	18	36
Detroit	Engineering	95	68
Drexel	Engineering	31	53
Drexel	Business Administration	23	41
Eastern Mennonite	Denominational liberal arts	34	35
Emory	University liberal arts	126	128
Fayetteville	Teacher training	119	117
Georgia Tech.	Engineering	64	146
General Motors	Institute Engineering	76	54
Huntington	Denominational	15	15
Illinois	Engineering	35	53
Los Angeles Pacific	Teacher training	24	15
LSU	Engineering	15	14
LSU	University liberal arts	21	19
Malone	Denominational liberal arts	18	20
Marian	Denominational liberal arts	21	22
Messiah	Denominational liberal arts	18	17
Michigan	Engineering	45	68
Minnesota	University liberal arts	24	24
Morehouse	Denominational liberal arts	47	50
Mt. Mercy	Denominational liberal arts	22	14
Mundelein	Denominational liberal arts	99	80
Nasson	Independent liberal arts	11	32
Northeastern	Business Administration	67	65
Northwest Christian	Denominational liberal arts	27	25

Table 2. Continued

School	Sample Type	AI N	CCI N
Oberlin	Independent liberal arts	50	50
Ohio State	Business Administration	27	51
Purdue	University liberal arts	34	132
Randolph Macon	Independent liberal arts	49	49
Rhode Island	University liberal arts	80	81
Rice	Engineering	28	40
Sarah Lawrence	Independent liberal arts	31	53
Seton Hill	Denominational liberal arts	99	99
Shimer	Independent liberal arts	38	30
St. Cloud	Teacher training	109	93
St. Francis	Denominational liberal arts	22	22
Syracuse	University liberal arts	412	422
Syracuse	Business Administration	74	74
Syracuse	School of Art	103	102
Syracuse	Forestry	85	84
Syracuse	Engineering	63	64
Syracuse	Home Economics	56	57
Syracuse	Nursing	14	17
Syracuse	Teacher training	81	84
Techny	Denominational liberal arts	69	71
Westminster	Denominational liberal arts	12	18

In a sample of freshmen at fourteen colleges there was an impressive homogeneity of responses to what, in the case of freshmen tested early in their first year, are expectations about college life. Upperclassmen, as noted in the discussion in Chapter III, differentiate between the features of their respective institutions. The freshmen seem to share a common set of expectations regardless of the type of institution that they are attending (Stern, 1966a, p. 1).

For each of the fifty-five schools in the sample summary data for each variable was obtained. The resulting means were interrelated, using Pearson's product moment correlation coefficient.

The matrix of intercorrelations was then factor analyzed according to the principal components procedure prescribed by Harmon (1960). The principal components results were inspected and then rotated according to the normal equamax criterion proposed by Saunders (1962). This solution was then utilized as the basis for joint personality and environmental dimensions.

The original fifty-five school sample was then rescored on the basis of the new dimensions. An examination of the scores and the relationships between scores on the new dimensions and previous research was made. Since individual cases matched for responses to both instruments were not available for this sample, statistical analyses dependent on within school measures were not possible. To further differentiate between schools, the sample was categorized into types of educational emphasis, as indicated in Table 2. The scores for the schools grouped by type were obtained, and are graphically presented in the next chapter.

To clarify the relationship between the newly extracted factors a second order factor analysis was carried out on the new dimensions. The scores for each of the fifty-five schools were intercorrelated and then factor analyzed following the same procedure that has been described earlier. This type of analysis specifies the interrelationships between the factors.

In order to extend the analysis of the new dimensions an additional sample was utilized. The new sample, described in Table 3, consisted of 1076 individual respondents from twenty-three colleges. Because of the availability of individual cases an estimate of the within school variance, necessary for the analysis of variance was possible. This

Table 3

Matched AI-CCI Respondents--Twenty-Three School Sample

School	N	Identification Number
Antioch[a]	38	21
Bennington	35	32
Buffalo State[a]	36	58
Buffalo, University of	29	64
Cincinatti Engineers	29	33
Dennison[a]	24	30
Eastern Mennonite[a]	31	50
Emory[a]	126	42
Marian	21	45
Michigan	45	35
Minnesota	33	63
Northeastern	14	26
Northwest Christian[a]	25	69
Oberlin[a]	100	29
Ohio State	28	27
Purdue	32	24
Randolph Macon	49	28
Rhode Island[a]	77	61
Rice	27	36
St. Cloud[a]	99	47
Sarah Lawrence	26	28
Seton Hill	99	39
Shimer[a]	53	46

[a] Coeducational sample used in two-way analysis of variance.

analysis was performed after each respondent had been rescored in terms of the new dimensions and the data for each school had been summarized. The nature of differences in describing college environment based upon the respondent's sex was explored in a two-way analysis of variance (sex by school) for the subsample indicated in Table 3. Males and females were represented in eleven of the schools. Unequal cell N's necessitated the use of the approximating procedure for two-way analysis of variance described by Walker and Lev (1953, pp. 381-382).

The results of these analyses, a discussion of them, and some remarks concerning the implications of the results are presented in the next several chapters.

CHAPTER V

RESULTS

The intercorrelations for the summary scores for the fifty-five school samples are reported in Tables 4 and 5. The first table contains the product-moment correlation coefficients for the scale level of the two instruments. Variables 1-30 are AI scales, 31-60 CCI scales. By inspecting the relationships of variables of the same name on both instruments (i.e. variables 1 and 31, 2 and 32...30 and 60) it may be observed that there are no strikingly high coefficients. More impressive than the relationships between instruments are the relationships within instruments. These relationships are, of course, not yet defined when working at the scale level. The within instrument relationships are those extracted in the factor analysis discussed in the earlier chapters.

In the matrix for the variables at the factor level high correlation values between instruments may be observed. Variables 1-12 as the AI factors, 13-23 as CCI factors. It is these particular relationships that are of interest in the current investigation, although in the procedure to be followed

Tab

Scale Variable In

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1		-275	566	113	-527	-411	377	023	667	-371	-022	-004	-090	-377	-524
2			086	-105	327	267	-009	566	-095	351	166	-204	403	179	417
3				050	-209	-017	257	276	374	-179	162	084	211	-113	-112
4					-169	080	090	-015	335	006	-051	259	-150	333	-123
5						600	-506	439	-661	645	204	-190	126	378	659
6							-655	340	-582	286	145	475	179	473	290
7								-257	522	-519	037	-192	-185	-229	-188
8									018	537	351	-174	406	237	311
9										-266	-003	-065	033	-244	-466
10											381	-397	353	413	591
11												-043	139	390	269
12													-132	207	-442
13														083	173
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Table 4

Intercorrelation Matrix

15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
24	488	423	-124	123	605	-035	492	-279	094	188	-214	166	136	301	-170
17	-222	-035	129	015	240	094	-091	-124	285	218	487	077	-171	-103	580
12	253	392	006	010	303	-035	242	-267	299	244	227	227	108	254	408
23	234	-139	-006	485	348	-031	362	540	126	-082	-565	142	495	617	-320
59	-624	-143	238	-174	-661	056	-593	197	-040	-046	348	-038	-141	-385	333
90	-392	165	721	132	-232	-089	-502	333	-276	173	031	426	254	-041	389
38	592	-062	-627	-021	315	-235	823	-515	464	-120	081	-423	-050	306	-189
11	-441	317	260	-017	-151	190	-243	-136	095	292	277	136	-224	-162	478
56	568	242	-341	204	672	207	557	-141	243	250	-260	092	118	541	-176
91	-546	-053	110	091	-367	469	-520	383	080	158	157	037	-230	-309	362
69	076	529	029	020	122	253	-020	-117	071	346	173	124	-116	-013	413
42	292	373	674	256	374	-345	027	207	-444	103	-480	461	683	464	003
73	-305	185	112	-006	035	378	-224	-063	219	330	227	136	-244	-151	506
25	-166	054	303	326	-126	-001	-161	469	-058	043	-137	127	097	071	211
	-428	-331	-093	-046	-582	-067	-331	192	287	-114	528	-319	-332	-394	392
		242	-164	242	662	-236	658	-083	019	146	-284	122	382	547	-158
			397	041	495	172	-071	-258	-267	614	-031	537	127	146	404
				195	002	-142	-423	336	-441	215	-192	530	416	078	321
					316	-020	263	377	-204	229	-466	322	329	260	-063
						060	469	-061	-054	506	-437	353	348	576	-122
							-324	051	055	421	064	366	-263	-035	169
								-255	349	-138	-238	-284	176	449	-352
									-139	-110	-423	225	360	230	-104
										-234	450	-384	-139	145	161
											075	615	004	146	516
												-185	-452	-423	600
													398	297	366
														675	-091
															-063

Table

31	32	33	34	35	36	37	38	39	40	41	42	43	44	4
-082	092	119	254	-379	-231	341	-047	016	-050	132	375	196	201	-0
110	063	059	-223	427	320	-178	197	-047	177	030	-109	-000	009	3
-065	148	069	125	000	289	099	352	-202	016	364	270	329	325	2
554	-534	463	391	-004	-329	-020	-492	452	555	136	161	-407	167	-3
200	-284	-113	-439	729	364	-601	075	-279	081	-071	-353	-336	-123	2
163	-264	-199	-104	636	430	-561	136	-398	211	265	054	-122	-028	3
-090	204	364	321	-489	-483	618	-033	343	-014	-147	028	163	-112	-2
253	-242	-123	-323	566	369	-439	050	-219	167	136	-235	-173	145	3
081	005	278	374	-494	-355	439	-222	390	177	157	237	088	317	-1
389	-339	041	-391	591	333	-539	-107	021	272	-014	-242	-438	180	0
011	-021	-117	-010	235	061	-078	189	-115	198	243	-055	-020	129	2
-080	-058	-228	273	006	135	-085	062	-342	178	392	483	212	140	1
-070	023	-084	-201	087	428	-000	091	-109	-038	298	013	057	281	2
408	-324	-066	-129	316	174	-344	-050	069	253	110	-143	-169	012	-0
317	-160	149	-441	457	172	-342	052	201	064	-243	-522	-289	-227	-0
010	081	190	366	-464	-432	375	-006	267	249	086	342	161	-014	-2
-208	195	-306	079	-021	102	006	182	-409	059	308	290	257	181	3
-015	-128	-411	-108	425	434	-411	079	-524	117	323	299	032	159	3
326	-189	197	082	-134	-140	095	-253	270	296	156	230	-159	172	-0
-049	020	156	435	-404	-291	363	-133	166	196	330	451	153	240	-1
-080	097	015	106	-048	132	052	013	021	012	226	012	014	301	2
111	-085	410	406	-427	-509	517	-181	385	176	065	186	020	-012	-3
499	-508	150	010	200	037	-351	-403	307	372	063	012	-458	143	-2
118	-015	518	193	-017	-021	251	062	304	128	088	037	-045	233	-1
-089	108	-047	056	072	083	-041	032	-123	127	288	130	129	117	2
-214	406	012	-292	198	330	-004	492	-159	-250	-089	-303	264	-136	2
-054	084	-182	113	046	274	-176	111	-259	193	382	402	202	223	3
137	-193	062	236	006	-045	-063	-207	-061	395	260	548	-080	200	0
108	-195	212	542	-175	-260	211	-220	191	368	228	474	005	235	-0
-105	247	-173	-251	366	523	-194	377	-291	045	146	067	218	142	4
	-738	510	-098	383	-065	-514	-528	453	712	036	-263	-656	048	-3
		-265	-023	-480	055	606	595	-274	-602	-173	239	811	-104	2
			456	-043	-383	136	-320	566	523	049	040	-289	180	-4
				-296	-434	385	-067	126	212	265	448	132	269	-1
					472	-801	029	-346	344	124	-166	-425	024	2
						-433	462	-520	-076	418	009	212	303	6
							111	212	-369	-054	289	497	056	-0
								-551	-371	178	166	745	009	5
									321	-265	-274	-405	-040	-5
										308	093	-472	326	-1
											385	172	703	4
												374	492	1
													065	3
														3

Table 4--Continued

44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
201	-091	555	144	-214	337	456	095	262	002	-182	146	-247	169	-242	224	123
009	300	-452	066	316	-167	-289	009	-131	073	190	035	314	-026	234	-227	180
325	249	129	343	129	110	196	105	-018	041	-063	380	228	386	082	-029	196
167	-365	-074	-197	210	484	473	-380	333	537	386	-173	-393	-223	410	473	-524
-123	233	-673	-133	387	-470	-632	-443	-410	092	-002	-202	297	-076	376	-480	-256
-028	300	-377	231	466	-318	-253	-102	-430	046	-157	173	153	274	404	-287	-103
-112	-270	330	-262	-406	335	380	136	494	-058	285	-153	-175	-323	-379	381	193
145	326	-410	205	455	-290	-350	-240	-211	160	028	082	288	225	392	-369	-069
317	-114	427	083	-181	559	599	098	418	191	126	118	-251	026	-117	411	094
180	089	-574	-063	448	-126	-415	-530	-240	362	093	-151	176	-076	498	-318	-363
129	265	083	258	166	042	036	-021	-196	070	-218	213	024	204	077	-180	201
140	176	246	424	163	114	328	283	-190	-035	-307	384	-167	456	082	051	115
281	231	-142	291	127	095	-097	051	-044	088	052	338	298	279	121	-135	088
012	-054	-275	044	243	-064	-124	-234	-101	179	105	034	-049	067	286	-086	-198
-227	-098	-574	-293	104	-336	-538	-427	-045	070	344	-295	252	-343	273	-331	-298
-014	-246	553	031	-308	461	617	230	313	003	-053	070	-410	-038	-276	309	189
181	312	444	636	003	104	193	266	-204	-179	-562	516	104	593	-133	-237	416
159	328	-060	475	389	-238	-160	102	-425	-049	-371	337	099	505	228	-334	055
172	-079	167	146	004	394	325	-090	333	240	088	107	-223	-036	151	140	-102
240	-129	570	347	-108	553	722	320	260	128	-190	354	-422	267	-120	388	288
301	251	-051	184	151	197	089	048	-109	138	-117	192	249	137	088	122	118
012	-345	373	-212	-258	433	586	027	439	137	289	-142	-437	-263	-222	530	002
143	-297	-239	-046	249	189	051	-369	-012	407	168	-122	-187	-086	474	104	-546
233	-173	-191	-245	102	203	164	-204	286	301	482	-152	167	-245	118	279	-109
117	247	165	551	144	140	195	274	-148	-011	-325	467	077	410	056	-102	401
136	258	-273	054	-011	-371	-438	108	-212	-260	039	067	601	027	-089	-372	311
223	354	176	564	224	156	231	250	-178	-005	-351	489	142	516	189	-072	253
200	019	120	167	175	367	380	-075	130	199	-054	065	-164	149	290	119	-137
235	-072	250	096	120	538	623	059	278	263	047	092	-287	103	163	507	-068
142	410	-195	416	257	-150	-292	093	-269	-093	-143	351	528	359	169	-423	297
048	-387	-506	-324	396	173	117	-720	068	677	563	-285	-311	-312	655	025	-709
104	282	445	261	-499	-103	-112	730	067	-704	-412	265	410	180	-666	-120	751
180	-499	-205	-418	079	491	469	-416	345	574	627	-287	-260	-501	260	483	-432
269	-195	345	-027	025	515	737	228	188	251	076	089	-363	-008	-040	789	-019
024	229	-713	-031	769	-421	-453	-456	-549	349	077	-083	097	079	629	-401	-335
303	626	-422	489	527	-296	-345	073	-538	055	-113	523	563	613	377	-510	167
056	-079	642	025	-629	384	389	463	507	-360	-056	083	-021	-127	-660	438	461
009	500	103	324	007	-353	-164	494	-369	-442	-429	386	387	428	-344	-240	585
040	-587	-047	-453	-285	437	300	-273	646	367	649	-400	-310	-606	115	418	-394
326	-106	-346	-051	501	481	393	-491	027	726	388	-006	-277	-092	638	081	-422
703	473	-013	616	512	319	482	197	-338	388	-110	717	051	643	354	073	202
492	192	435	249	119	410	502	190	054	068	-317	311	-198	312	-077	271	200
065	396	439	426	-271	-096	101	713	-136	-574	-467	531	237	489	-555	000	745
	382	-043	405	443	514	389	-005	-029	565	028	477	032	405	399	126	014
		-071	591	357	-172	-159	344	-437	-130	-392	611	485	639	097	-469	550
			267	-623	306	449	517	284	-459	-481	227	-260	190	-680	238	446
				188	137	165	563	-312	-142	-525	884	369	891	060	-289	613
					-047	003	-271	-490	633	141	231	045	336	802	-084	-260
						765	-037	484	492	199	194	-241	-007	160	460	-086
							165	298	397	088	304	-429	140	045	649	031
								-065	-523	-469	549	146	487	-482	118	808
									042	439	-332	-151	-479	-128	365	-157
										496	-032	-321	-106	781	266	-586
											-386	-034	-528	428	301	-571
												260	894	052	-180	584
													299	021	-480	343
														095	-276	498
															-049	-536
																-209

Table 5

Factor Variable Intercorrel

	1	2	3	4	5	6	7	8	9	10	11	12
1		631	297	518	018	-372	-388	-368	-043	210	060	498
2			395	563	289	-429	-640	-753	-451	-252	-282	214
3				742	316	-243	169	-067	-040	-454	-021	-080
4					278	-348	-047	-197	-031	-198	006	162
5						581	183	-050	-380	-348	-464	020
6							488	334	-203	-152	-469	-096
7								793	317	047	034	-183
8									639	395	450	-073
9										556	739	411
10											476	385
11												241
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												

5

correlation Matrix

12	13	14	15	16	17	18	19	20	21	22	23
498	020	-097	-416	066	-325	-229	-316	-381	-030	430	033
214	255	-074	-073	2 4	-074	-292	-540	-519	-404	320	-056
-080	560	553	211	629	385	245	-263	-261	-197	-066	-430
162	449	327	-062	489	073	125	-347	-398	-133	309	-214
020	100	-095	038	044	272	039	193	207	113	-052	330
-096	-308	-286	040	-369	180	-048	485	674	327	-319	522
-183	-024	265	045	022	199	436	498	442	430	-212	032
-073	-187	165	-113	-080	003	402	596	431	578	-059	098
411	-046	223	-233	116	-116	333	264	130	400	117	-040
385	-537	-299	-595	-285	-596	-081	362	101	528	430	354
241	077	286	-160	148	-146	324	048	-228	143	172	-319
	-220	-233	-407	-128	-290	-236	-075	035	128	205	349
		810	553	747	677	554	-407	-367	-417	-115	-723
			470	799	545	694	-156	-191	-132	-117	-768
				390	800	282	-190	154	-601	-697	-482
					449	405	-360	-205	-271	-036	-577
						500	-055	257	-371	-666	-386
							318	037	268	-019	-432
								510	799	063	456
									357	-510	555
										452	491
											166

there must be relationships within and between the two instruments for joint need-press factors to emerge. The use of the variables at the factor level also permits some confidence in the assumption that the variables being used are, in fact, independent.

The principal components factor analysis results may be found in Tables 6 and 7. For the scale level the twelve factors shown (eigenvalues >1.00) accounted for 86 per cent of the variance of the original matrix. There are high loadings for scales from both instruments on each of the twelve factors. For the factor level of the instruments the five factors (eigenvalues >1.00) account for 82.8 per cent of the variance of the original correlation matrix. Considering that this matrix is in itself based on a reduction of original data this is a reasonably high proportion of the variance to be accounted for by five factors.

The two principal components solutions were rotated according to the normal equamax criterion. The results of the rotations are shown in Tables 8 and 9. The equamax solution for the scale level yields factors which exhibit loadings on both instruments, as would be expected. They also contain some evidence of factors that could be interpreted as being composed of elements from only one instrument.

Table 6

Scale Variable Principal Components Factor Analysis

Scale	Factor 1	2	3	4	5	6	7	8	9	10	11	12
1	-573	251	169	170	134	-178	459	-224	236	-167	093	-145
2	438	-014	045	491	031	-267	-307	011	097	331	131	328
3	-100	345	293	469	-137	-377	148	-245	163	-174	108	-322
4	-373	-537	526	-090	025	-059	-182	-035	053	-044	185	011
5	823	-264	-042	-032	012	-074	-056	172	102	-129	-066	071
6	630	018	420	-316	-048	-194	-292	141	111	061	151	-087
7	-684	-021	-289	413	-092	-378	009	030	-152	022	-006	152
8	562	-025	236	391	262	-230	237	-099	135	052	357	160
9	-690	054	242	387	214	010	221	-179	060	063	078	058
10	656	-370	170	243	345	239	003	119	095	-237	-032	087
11	200	156	228	309	407	-244	038	479	-244	-353	-085	122
12	-118	313	565	-567	-200	-239	-198	-021	-059	050	061	-001
13	300	173	172	470	179	248	-130	-174	053	001	378	-036
14	332	-243	312	-114	244	-171	-415	172	-331	-272	263	-044
15	586	-422	-264	274	130	-173	-333	073	-127	-172	-038	-148
16	-733	130	178	-017	089	-390	-013	024	-128	032	-285	-051
17	-005	595	409	043	443	-244	226	092	082	-101	-038	-077
18	430	276	518	-473	-008	-145	-126	-099	134	013	133	021
19	-237	-148	436	-120	339	-011	-366	-226	-139	-093	095	177
20	-661	265	478	047	267	-081	110	022	-023	114	058	-081
21	121	120	171	373	331	644	036	253	212	046	-041	045
22	-769	-141	009	214	-113	-380	061	-006	-187	-006	147	153
23	124	-485	427	-370	095	266	-324	-085	-014	-153	-043	-222
24	-147	-260	-094	737	-328	-092	-138	037	110	-199	067	-070
25	062	394	418	232	559	-016	000	148	101	360	-085	-095
26	446	215	-422	577	-128	-188	-129	065	057	076	-191	-189
27	090	405	622	-143	271	077	-178	-041	279	202	-131	-125
28	-255	-031	579	-385	-192	-242	-223	-201	221	-078	-238	139
29	-539	-038	548	-028	-091	-206	-184	021	202	051	021	095
30	526	344	188	441	180	-266	-298	-009	186	010	-092	-119
31	097	-774	376	064	124	-166	079	-113	-167	045	-048	-141
32	-127	721	-454	136	-018	060	-292	-010	154	-044	-156	019
33	-375	-583	140	407	-144	-012	-128	156	113	085	-157	-207
34	-611	008	312	051	-266	101	-097	491	179	092	109	-097
35	768	-291	290	000	-126	-270	178	174	109	061	009	073
36	692	327	262	157	-294	087	-005	-282	-107	-047	036	-096

Table 6. Continued

Scale	Factor 1	2	3	4	5	6	7	8	9	10	11	12
37	-072	345	-314	224	-011	140	-276	007	016	-129	091	144
38	253	655	-175	172	-302	-164	-138	202	-034	-158	-009	-122
39	-457	-629	-092	228	253	129	-237	-124	-181	120	-078	-089
40	-035	-502	651	145	021	-181	-007	087	-085	101	-317	087
41	034	298	716	224	-291	150	067	076	-277	-060	054	-020
42	-363	363	466	-087	-260	012	-124	058	409	-274	-049	159
43	-150	811	-160	091	-227	-017	-209	061	-015	-054	060	-107
44	-055	110	617	362	-256	371	081	-096	-007	-292	-044	152
45	437	607	238	161	-180	075	049	-064	-064	-008	-104	403
46	-669	542	-068	-196	266	-009	022	040	021	-212	027	-038
47	155	727	492	063	101	097	-036	-159	-231	051	-039	-050
48	496	-194	636	141	-339	000	191	144	018	123	027	110
49	-625	-129	470	269	057	246	-156	-061	-033	-125	-224	078
50	-749	030	520	126	-101	092	-015	175	-107	046	-060	-086
51	-223	791	099	-046	-076	110	-194	101	-185	309	123	008
52	-606	-289	-172	165	206	017	-306	-344	112	-076	050	126
53	-022	-614	608	277	-169	157	166	047	-090	-010	-076	037
54	-106	-728	-040	361	-208	-011	-181	-218	-110	197	081	-050
55	078	697	491	165	-078	159	-028	-081	-345	050	-011	-119
56	498	357	-170	335	-087	096	-243	-334	111	021	-161	-045
57	230	723	502	-004	-099	077	139	-101	-195	-021	071	-127
58	394	-504	628	145	-168	051	053	-125	-025	122	-089	-008
59	-682	-242	118	063	-198	215	-136	359	134	121	328	-099
60	-063	872	-142	155	055	-043	-140	080	-162	149	-097	188
Eigenvalue	12.487	11.239	8.759	4.882	2.797	2.465	2.204	1.741	1.490	1.302	1.171	1.060
Total	51.60											
Per Cent of Variance	20.81	18.73	14.60	8.14	4.66	4.11	3.67	2.90	2.48	2.17	1.95	1.77
Total	85.99											

Table 7

Factor Variable Principal Components Factor Analysis

Variable	Factor					Total
	1	2	3	4	5	
1	241	153	-699	226	344	
2	-163	510	-719	034	305	
3	163	669	079	096	532	
4	262	534	-280	081	601	
5	-458	048	110	031	764	
6	-560	-468	462	040	335	
7	161	-257	734	-038	328	
8	446	-473	650	028	114	
9	784	-283	246	370	-078	
10	548	-655	-217	098	-095	
11	825	-052	073	175	-289	
12	260	-243	-426	694	189	
13	177	868	262	-038	104	
14	448	670	486	-060	071	
15	-341	590	539	152	-286	
16	321	736	199	088	185	
17	-253	568	648	239	053	
18	453	256	634	-199	190	
19	084	-663	461	-198	281	
20	-332	-502	550	400	118	
21	356	-698	182	-237	445	
22	475	-190	-565	-462	312	
23	-344	-768	-204	185	324	
Eigenvalue	3.899	6.383	4.934	1.367	2.468	
Per Cent of Variance	16.95	27.75	21.45	5.94	10.73	82.82

Table 8

Scale Variable Equamax Rotation

Variable	Factor												
	1	2	3	4	5	6	7	8	9	10	11	12	Com.
	077	064	088	081	084	080	101	078	092	098	073	085	997
1	-860	-204	069	140	075	-176	-048	-121	-011	000	-116	031	873
2	234	138	-019	120	064	-124	125	354	-004	051	766	086	845
3	-711	088	042	058	-083	-160	-008	420	123	-281	169	-089	851
4	-116	154	381	-077	341	-058	254	-353	370	077	047	-406	789
5	340	412	-267	-145	-351	375	205	179	021	178	280	002	825
6	299	341	-040	150	-386	263	-007	069	552	-101	286	-132	865
7	-271	-102	234	-163	306	-742	-033	113	-250	159	-047	095	922
8	-244	294	-232	136	-184	146	120	008	-102	-033	766	-034	887
9	-585	-205	255	223	435	-264	105	-181	-156	-053	035	-022	831
10	121	520	-155	019	023	589	328	026	-211	099	310	-063	920
11	-130	789	014	278	-047	-102	114	069	-195	-081	034	285	875
12	034	006	084	192	-159	-166	-088	-213	-790	-320	-144	030	900
13	-131	107	022	127	195	339	-157	169	-169	-318	522	-063	658
14	250	754	-007	-019	071	051	-101	-100	236	-128	140	-271	825
15	331	525	-215	-224	-003	122	047	417	-204	215	215	-303	897
16	-309	-043	170	263	234	-622	081	-028	183	052	-407	007	848
17	-492	258	-110	634	-138	-026	-091	-003	136	-173	-012	255	864
18	069	137	-190	234	-293	254	-067	-117	686	-231	179	033	836
19	-007	246	004	164	555	-045	017	-285	368	-084	045	-165	651
20	-467	-064	319	496	236	-292	-019	-264	136	-175	-150	-023	852
21	-008	038	277	385	197	578	123	013	-395	-096	127	213	839
22	-341	-055	316	-180	290	-723	025	-177	-029	061	-044	-044	898
23	239	241	063	-035	188	435	183	-210	383	-025	-193	-479	837
24	-242	078	381	-420	213	-126	189	480	-257	022	224	-096	839
25	-141	109	059	882	033	053	034	075	-034	-104	200	047	877
26	093	040	-141	-016	-189	-043	-041	806	-361	031	228	084	907
27	-093	-203	056	691	024	289	043	055	472	-195	040	035	843
28	-110	-063	071	043	147	-090	297	-098	829	-009	-169	014	866
29	-262	-048	450	145	249	-252	186	-128	509	000	-009	-029	731
30	-061	311	-143	360	-053	131	001	647	113	-102	397	070	874
31	005	286	-041	-073	064	-039	536	-207	032	108	111	-646	867
32	000	-241	-039	141	153	-044	-493	510	-066	-023	-160	513	900
33	-073	-004	527	-118	239	-133	481	176	-129	219	-055	-398	814
34	-125	-103	865	081	013	-144	041	-096	128	-029	-183	050	867
35	164	335	-162	-053	-555	191	433	047	155	053	441	-092	931

Table 8--Continued

Variable	Factor												
	1	2	3	4	5	6	7	8	9	10	11	12`	Com.
36	053	031	-322	-051	-264	315	078	339	136	-600	313	019	877
37	-171	-216	336	-069	530	-264	-419	109	-141	-002	-194	338	903
38	-004	092	010	-019	-323	-075	-325	549	014	-305	-013	391	773
39	100	-002	182	-049	606	-172	166	-099	-270	251	-112	-499	877
40	011	264	171	154	116	-141	760	-099	214	-009	055	-268	864
41	-154	129	271	127	-067	022	274	-014	154	-780	073	083	855
42	-364	-090	391	028	114	092	055	032	564	-137	-134	413	845
43	-098	-170	124	110	-053	-148	-511	402	072	-357	-128	410	832
44	-305	042	252	-088	238	281	419	000	081	-574	071	195	857
45	053	-008	-236	137	-121	106	119	180	114	-507	294	597	863
46	-397	-083	118	266	232	-205	-472	-164	071	-011	-453	315	904
47	-127	032	-162	505	010	062	-093	107	193	-707	040	211	906
48	070	153	143	-021	-381	193	598	-046	190	-336	407	-056	909
49	-249	-016	404	117	630	-055	357	-086	072	-175	-234	-025	865
50	-282	-082	616	205	282	-281	211	-184	116	-273	-294	-058	922
51	138	-300	149	359	-004	-242	-521	108	007	-406	-063	356	897
52	-172	-151	102	-146	739	-176	-102	-044	002	312	-031	-162	799
53	-076	154	309	-134	103	102	746	-210	-019	-182	128	-329	923
54	152	-093	170	-377	308	-164	324	076	-161	113	259	-561	856
55	-106	007	-003	393	-015	-003	-061	146	097	-841	-007	169	936
56	101	-127	-347	027	064	263	-076	626	-039	-207	252	135	744
57	-208	010	-115	343	-247	110	-096	062	211	-765	040	202	933
58	092	136	018	-039	-068	230	689	-051	191	-216	314	-390	897
59	-067	-165	856	-096	180	-114	-092	-238	-025	080	-087	-157	923
60	043	-119	-079	397	046	-273	-363	287	-069	-332	000	589	933
Latent Roots	3.958	3.299	4.564	4.199	4.375	4.152	5.214	4.053	4.553	5.085	3.770	4.377	

Table 9

Factor Variable-Equamax Rotation[a]

	Factor Loadings					Communality
	1	2	3	4	5	
1. Self-Assertion	-033	267	-400	566	432	739
2. Audacity-Timidity	-372	341	-705	267	271	897
3. Intellectual Interests	-196	848	-072	090	-048	772
4. Motivation	-183	757	-202	287	263	799
5. Applied Interests	-803	256	246	192	-036	808
6. Orderliness	-579	-322	587	026	275	859
7. Submissiveness	-019	167	823	-110	-144	739
8. Closeness	345	000	860	-013	-025	858
9. Sensuousness	748	120	456	340	031	898
10. Friendliness	509	-351	285	360	448	795
11. Expressiveness-Constraint	852	166	143	120	124	803
12. Egoism-Diffidence	191	-034	-066	881	081	825
13. Aspiration Level	054	815	-208	-294	-263	866
14. Intellectual Climate	302	799	106	-326	-219	895
15. Student Dignity	-051	260	-135	-381	-791	859
16. Academic Climate	140	808	-123	-088	-177	727
17. Academic Achievement	-163	471	101	-215	-749	867
18. Self-Expression	236	573	490	-346	-065	748
19. Group Life	-081	-244	824	-056	167	776
20. Academic Organization	-202	-336	619	238	-496	839
21. Social Form	007	-130	772	123	523	902
22. Play-Work	069	089	-049	068	934	892
23. Vocational Climate	-414	-577	318	498	188	888
Latent Roots	3.314	4.947	4.939	2.407	3.448	$\Sigma h^2 = 19.051$

---

[a] Underlined variables selected for inclusion in factor scoring.

The factor level equamax solution is quite clear. It shows five factors, all of which are clearly composed of variables from both instruments. The interpretation of the solution is, at least from an intuitive position, clear and very satisfactory. Because of the clarity of this solution and the other comments made previously regarding the scale level, the factor level was selected as the basis for the determination of the joint personality and environmental factors.

It is worth, at this point, reiterating the difference between this type of analysis and the one performed by Stern that was discussed earlier in this report. The analysis which determined the properties of the original instruments were based on an analysis of scores across a sample of individual respondents. The analysis reported here treats mean scores for respondents, grouped by institutions, as the basic unit of data.

Factor Results

The factors, to be described below, are based on composite contributions of previously defined factors which describe personality characteristics of students and environmental characteristics of the institutions which they attend. The relative contribution of personality and environmental variables varies from factor to factor. However, each of the five contains elements from both sets of variables. Because the new dimensions consist of personality and situational components the term _culture_ has been selected as the generic term describing the dimensions extracted here. Culture is often used as a descriptive term characterizing a particular tribe or group, and it does not seem inappropriate to apply this same usage to descriptive categories for students and their colleges, particularly when considered in the joint way that they are here.

The description of each of the five factors contains a summary of the elements which contribute to it, and a listing of those elements. Some indication of the kinds of schools tending to score in a particular direction is also provided as an aid to interpreting the material.

College and University Cultures

1. _Self-Expression Culture_. This factor consists of one environmental factor, Non-vocational Climate, which suggests the encouragement of impractical activities in an artistic or theoretical-speculative sense. The personality components suggest students who are interested in others and themselves as sources of gratification. The narcissistic aspects of the

personality components indicate a role conception that may be best described a feminime. The personality variables are Non-applied interests, Disorder, Sensuousness, Friendliness, and Expressiveness.

2. Intellectual Culture. This factor is composed of personality factors related to intellectual and motivational needs, and press factors which stress the setting of high achievement standards, student involvement in decision making, good faculty and facilities in scientific areas, and the opportunity for students to express themselves in theoretic or artistic areas. Schools with high scores on this factor are liberal arts colleges commonly recognized as being of high quality. Need factors in the Academic Culture are Intellectual Interests and Motivation. The press factors are Aspiration Level, Intellectual Climate, Academic Climate, Academic Achievement, Self-Expression, and Non-vocational Climate.

3. Nurturant Culture. This factor is characterized by personality aspects which describe constrained, well organized students who are not likely to depart from the direction of their peer group. The environmental elements

describe an institutional setting providing organized social activities and a well organized educational process, neither of which present any risk to the students. High scoring schools are typically small, denominational colleges. The low end of the spectrum for this culture includes the liberal arts colleges which had high Academic Culture scores. Personality factors included in this culture are Timidity, Order, Submissiveness, Closeness, Sensuousness, and Self-Assertion in its reversed form. Environmental factors are Self-Expression, Group Life, Academic Organization, and Social Form.

4. Vocational Culture. This factor is composed of personality characteristics concerned with the self in a fashion where students see real and imagined focus placed upon themselves by others. The one environmental component stresses conformity in all forms of institutional life. This factor appears to be the educational counterpart of the culture of the organization man. The schools scoring at the high end of this factor stress vocational educational goals and the students are most likely to enter the business world. The personality aspects of this factor are Self-Assertion and Egoism. The environmental component is Vocational Climate.

5. Collegiate Culture. The personality aspects of this factor stress a friendly, group centered student body while the environmental components suggest that the institution provides neither a well organized academic situation nor intellectual opportunities in scientific or humanistic areas. The presence of the student dignity factor in a reversed form indicates that there are administrative counteractions to the playful aspects of student life. The personality factors are Self-Assertion and Friendliness. The environmental factors are Student Control, Non-academic Achivement, Academic Disorganization, Social Form, and Play.

Second Order Factor Analysis

The presentation of the joint factor structure may be clarified by an examination of the relationship between the culture dimensions that were extracted. Scores for the fifty-five schools in the sample were intercorrelated, and that matrix was subjected to the same kinds of analyses as those done previously. The second order factor analysis is summarized in Table 10.

Table 10

Culture Dimensions--Second Order Analysis

		Fine Culture Interrelations				
		1	2	3	4	5
Self-Expression	1	-	422	-180	-452	185
Intellectual	2		-	-123	-667	-373
Nurturant	3			-	024	-126
Vocational	4				-	455
Collegiate	5					-

		Principal Components Factor Analysis	
		I	II
Self-Expression	1	-589	626
Intellectual	2	-877	004
Nurturant	3	143	-623
Vocational	4	901	100
Collegiate	5	506	732

		Equamax Rotation	
		I	II
Self-Expression	1	-453	731
Intellectual	2	-859	177
Nurturant	3	016	-639
Vocational	4	903	-081
Collegiate	5	641	617

The interrelationships of the five culture dimensions are graphically represented in Figure 1. The coordinates for each point are the rotated factor loadings (see Table 10). The Intellectual culture and the Vocational culture are at opposite ends of the continuum represented by the vertical axis. The Collegiate and Self-Expression cultures fall between the Vocational and Intellectual on one side. The Nurturant culture falls between them on the other side of the figure.

In Figure 1 it may be noted that the factors which emerged from the second order analysis are, although represented in two dimensions, circular in their relationship. This is a form of the circumplex structure, and is similar to that described by Stern for the Activities Index (Stern, 1966b).

The scoring that was done for the second order analysis, and is used in the results which follow was based on the summing of raw score values for those variables included in a particular factor. Stern has reported an analysis that deals with various scoring methods for the original factor structure of the AI and the CCI (Hamaty, 1966). In that analysis he compares the effects of scoring by four methods. The first, summing raw scores for the variables included in a factor is

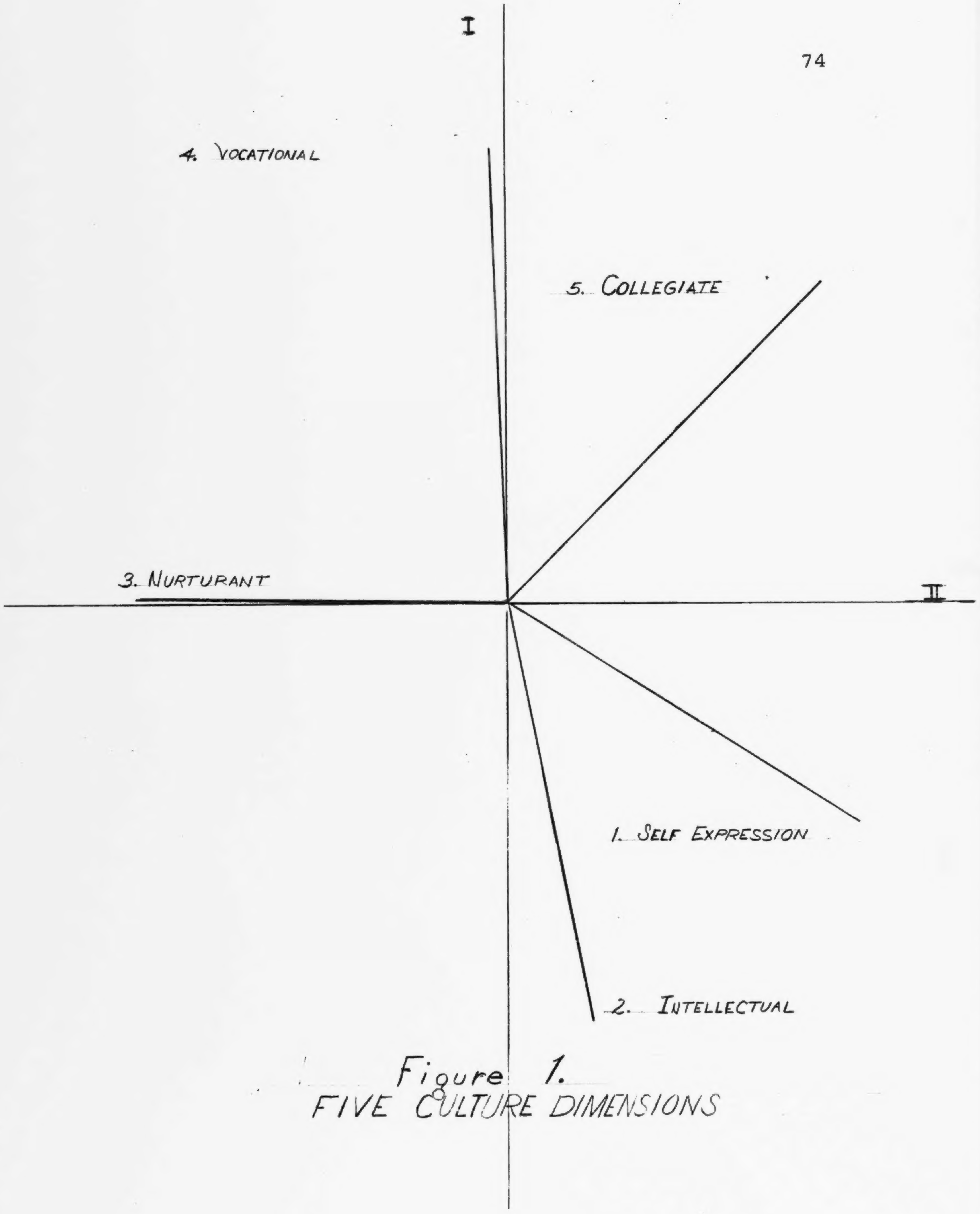
I
4. VOCATIONAL
5. COLLEGIATE
3. NURTURANT
II
1. SELF EXPRESSION
2. INTELLECTUAL

Figure 1.
FIVE CULTURE DIMENSIONS

similar to the second, where standardized rather than raw scores are summed. The third and fourth methods deal with the relationship of variables to factors as demonstrated by a multiple regression analysis. The scores are included in either a raw or standardized form. Stern reports relatively small differences in the scores obtained by each of the methods. In view of the small magnitude of the differences between scores obtained by each method, summing raw scores was selected as the method to be employed. The computation of the scores by summing raw value components for each variable has the added virtue of simplicity.

Representative Schools for Each Culture

Scores for each of the five cultures for the fifty-five schools in the sample were obtained. High and low schools for each of the five dimensions are shown in Table 11. The high and low schools were selected on the basis of being further than one standard deviation from the mean for the fifty-five schools in the sample.

The Self-Expression culture distribution has independent liberal arts colleges at the high end, but two female

Table 11

College and University Culture Score Distributions

1. Self-Expression Culture $\overline{X} = 96.2328$ $\sigma = 10.4445$

High		Low	
Sarah Lawrence	121.82	Marian	74.05
Bryn Mawr	118.51	Techny	76.08
Oberlin	113.24	Malone	79.36
Randolph Macon	113.08	LSU--Eng.	80.45
Syracuse--Educ.	111.95	Nasson	82.08
Syracuse--Home Ec.	111.75	E. Mennonite	83.36
Shimer	108.35	Georgia Tech.	84.83
Mundelein	107.59		
Antioch	107.55		
Seton Hill	107.52		

2. Intellectual Culture $\overline{X} = 186.6428$ o = 20.5254

High		Low	
Oberlin	243.16	Cincinatti--Bus. Ad.	153.41
Sarah Lawrence	237.94	G. M. Institute	154.80
Shimer	237.12	Huntington	157.87
Bryn Mawr	232.51	Rhode Island	160.34
Antioch	220.71	Drexel--Bus. Ad.	160.57
Michigan	211.89	St. Cloud	164.14
Cornell	209.56	Mt. Mercy	165.66
Randolph Macon	209.04	Syracuse--Bus. Ad.	166.01
Rice	208.89		
Marian	207.44		

Table 11. Continued

3. Nurturant Culture $\overline{X}$ = 230.3986 o = 21.5139

High		Low	
Northwest Christian	276.63	LSU--Eng.	197.50
Marian	269.75	Shimer	200.25
Seton Hill	266.69	Drexel--Bus. Ad.	200.46
Huntington	265.80	Cornell	201.19
Mt. Mercy	262.14	Cincinatti--Eng.	202.81
Syracuse--Nursing	262.04	G. M. Institute	202.93
Randolph Macon	259.06	Westminster	203.39
Messiah	258.28	Antioch	205.22
Ball State	257.92	Cincinatti--Bus. Ad.	205.47
Fayetteville	257.80	Bryn Mawr	205.52
Malone	255.81	LSU--Lib. Arts	206.00
L. A. Pacific	254.15	Rice	207.94

4. Vocational Culture $\overline{X}$ = 58.0236 o = 6.0847

High		Low	
Ohio State	69.95	Oberlin	40.13
Messiah	69.47	Sarah Lawrence	43.30
Drexel--Bus. Ad.	67.58	Bryn Mawr	43.39
Detroit	65.22	Randolph Macon	46.16
Fayetteville	65.03	Antioch	47.45
Morehouse	64.84	Shimer	49.04

5. Collegiate Culture $\overline{X}$ = 136.2291 o = 17.0031

High		Low	
Syracuse--Bus. Ad.	171.45	Marian	97.60
Syracuse--Home Ec.	165.65	Sarah Lawrence	107.44
Syracuse--Lib. Arts	164.84	Techny	111.36
Syracuse--Educ.	164.72	Northwest Christian	111.48
Westminster	163.00	LSU--Eng.	111.78
Syracuse--Fine Arts	159.04	Oberlin	112.43
Ohio State	157.25	Bryn Mawr	113.21
Syracuse--Eng.	156.29	Malone	115.04
Rhode Island	155.16		

subdivisions of a university are also included, as are two coeducational institutions. The schools not recognized as having a dominant Self-Expression culture are the small denominational colleges and several of the technical training programs.

The schools at the high end of the Intellectual culture distribution include those commonly considered to be among those liberal arts colleges providing excellent opportunities for intellectual development. The two universities that are included are also recognized as unusually good. The low scoring schools include two denominational colleges, a university and three vocationally oriented schools.

The institutions that may be recognized as providing a Nurturant culture are, for the most part, small denominational colleges. One subdivision of a university is also included. The schools low in the Nurturant culture distribution include some of the quality liberal arts colleges from the upper end of the Intellectual culture distribution. Also included are some vocationally oriented programs.

The Vocational culture is emphasized as those institutions providing educational emphasis for a particular job or profession. The low schools include the recognizably good liberal arts colleges whose programs are not focused on a particular goal.

The Collegiate culture places, with one exception, the divisions of various universities near the upper end of the distribution. Institutions lacking a Collegiate culture are the small, denominational schools, and several of the better independent liberal arts colleges. Some of the denominational schools at the lower end of this dimension are found at the upper end of the Nurturant culture distribution.

Further differences between educational styles may be noted when the schools in the sample are separated by sex (for the coeducational institutions the respondents were separated by sex) and according to the administrative type as listed for each school in Table 2. Graphic representation of the type differences, in standard score form, are presented in Figures 2 and 3 for the males and females respectively. The need and press components may be seen together as they contribute to the total culture score. The upper half of the figures represents that segment of the culture score attributable to personality components, the lower half that attributable to the environmental components.

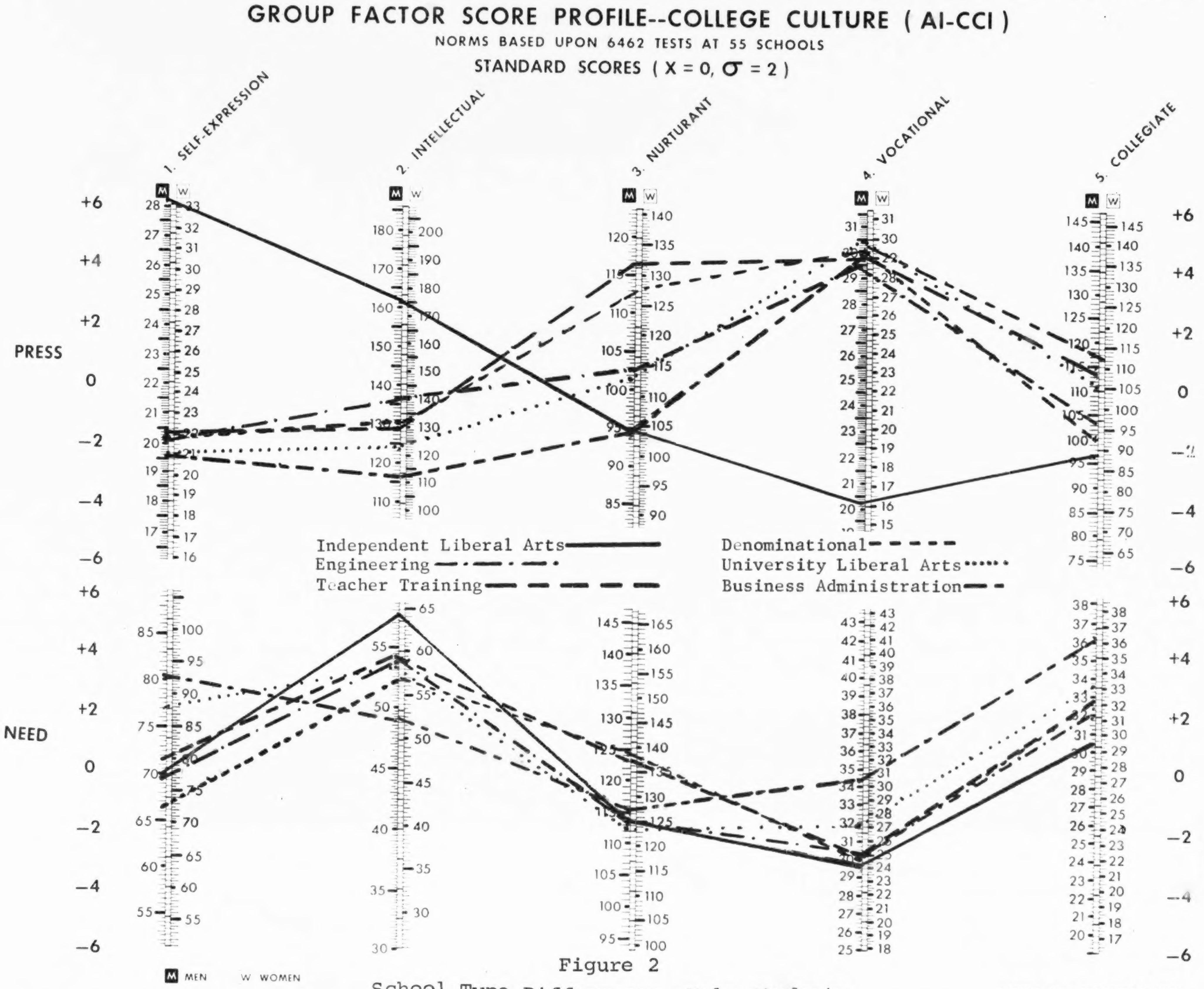

Figure 2

School Type Differences--Male Students

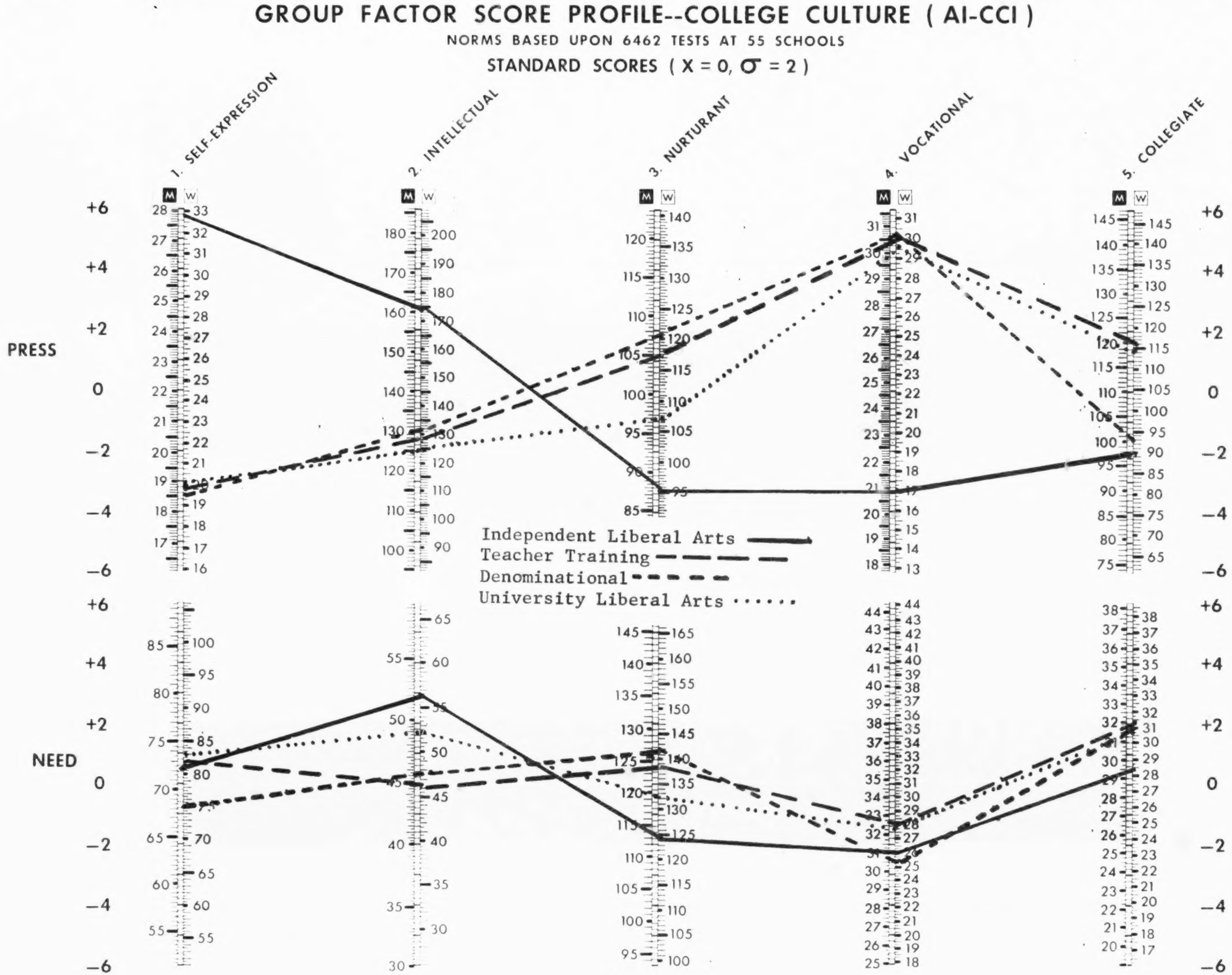

Figure 3
School Type Differences--Female Students

Analysis Variance

As noted in Chapter IV the nature of the data for the fifty-five school sample limited the type of analysis that could be performed with it. To overcome this limitation a twenty-three school sample, N=1076, was utilized. This is the same sample upon which Stern's factor analysis was based, and is the sample used in much of the previous research conducted with the Syracuse Indexes. Summary scores for each of the five cultures were obtained for each school. An analysis of variance, reported in Table 12 was performed. The F ratios for each dimension were significant at a level greater than .001. Colleges may be differentiated then, on the basis of the cultural dimensions extracted here. The magnitudes of the F ratios are consistent with those reported by Stern in an earlier analysis based on the CCI differences taken alone.

In light of the sex differences reported in previous research the cultural dimensions were examined in terms of differences which might be attributable to the sex of the respondents. Within the twenty-three school sample there are eleven coeducational institutions, as indicated in Table 3.

Table 12

Analysis of Variance Across Twenty-Three Schools[a]

	Culture	$\overline{X}$	σ	f
1.	Self-Expression	102.55	11.49	14.86*
2.	Intellectual	197.58	26.49	45.48*
3.	Nurturant	231.88	22.28	27.34*
4.	Practical	54.32	8.74	27.11*
5.	Collegiate	130.52	17.19	36.97*

[a] There are 22 and 1053 degrees of freedom.

*Significant >.001 level.

A two-way analysis of variance based on this sample was performed. The results of that analysis are summarized in Table 13. The interaction effects of school and sex were found to be significant in two factors, the Intellectual culture and the Nurturant culture. With significant interaction and insignificant sex variance we can attribute the differences for the Intellectual culture to school variations. In the case of the Nurturant culture interaction, since the main effects are significant, this type of analysis limits further comment.

The remaining three cultures have no significant interaction effects, but the main effects are significant at least at the .05 level.

To show the meaning of each of the factors and their relationship to the original instruments scores for each of the schools were plotted on graphs specially constructed for this purpose and first used by Hamaty (1966). The graphs may be found in Figures 4-8. The vertical line at the center of the chart represents a score continuum for the cultural dimension. The lines which cross at 45 degree angles represent score components from the AI (top left) and CCI (top right).

Table 13

Two-Way Analysis of Variance Results[a]

	1 Self-Expression	2 Intellectual	3 Nurturant	4 Vocational	5 Collegiate
Sex	.001	--	.001	.001	.05
School	.001	.001	.001	.001	.001
Interaction	--	.001	.001	--	--

[a] Values are significant levels of f ratio.

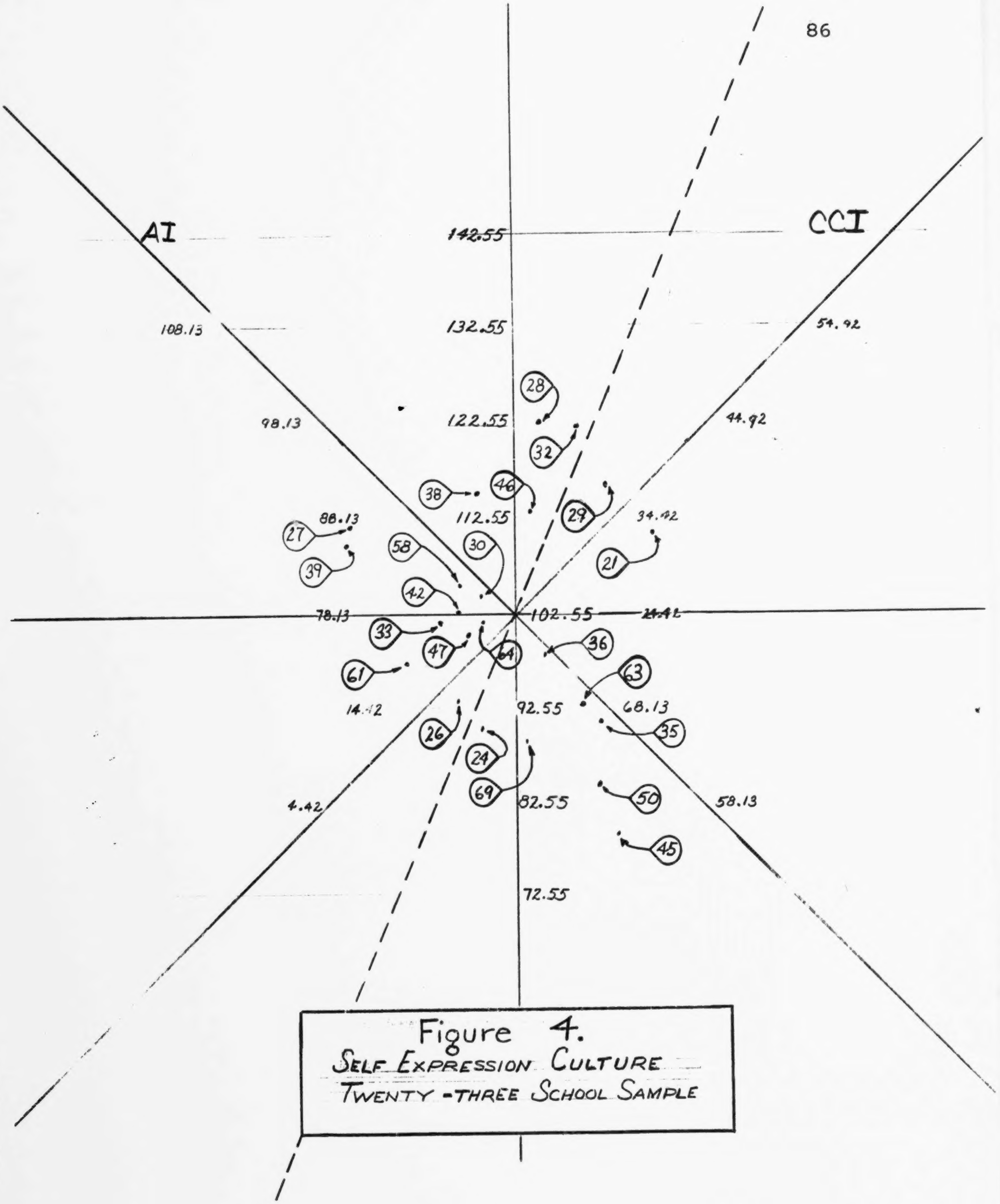

Figure 4.
Self Expression Culture
Twenty-three School Sample

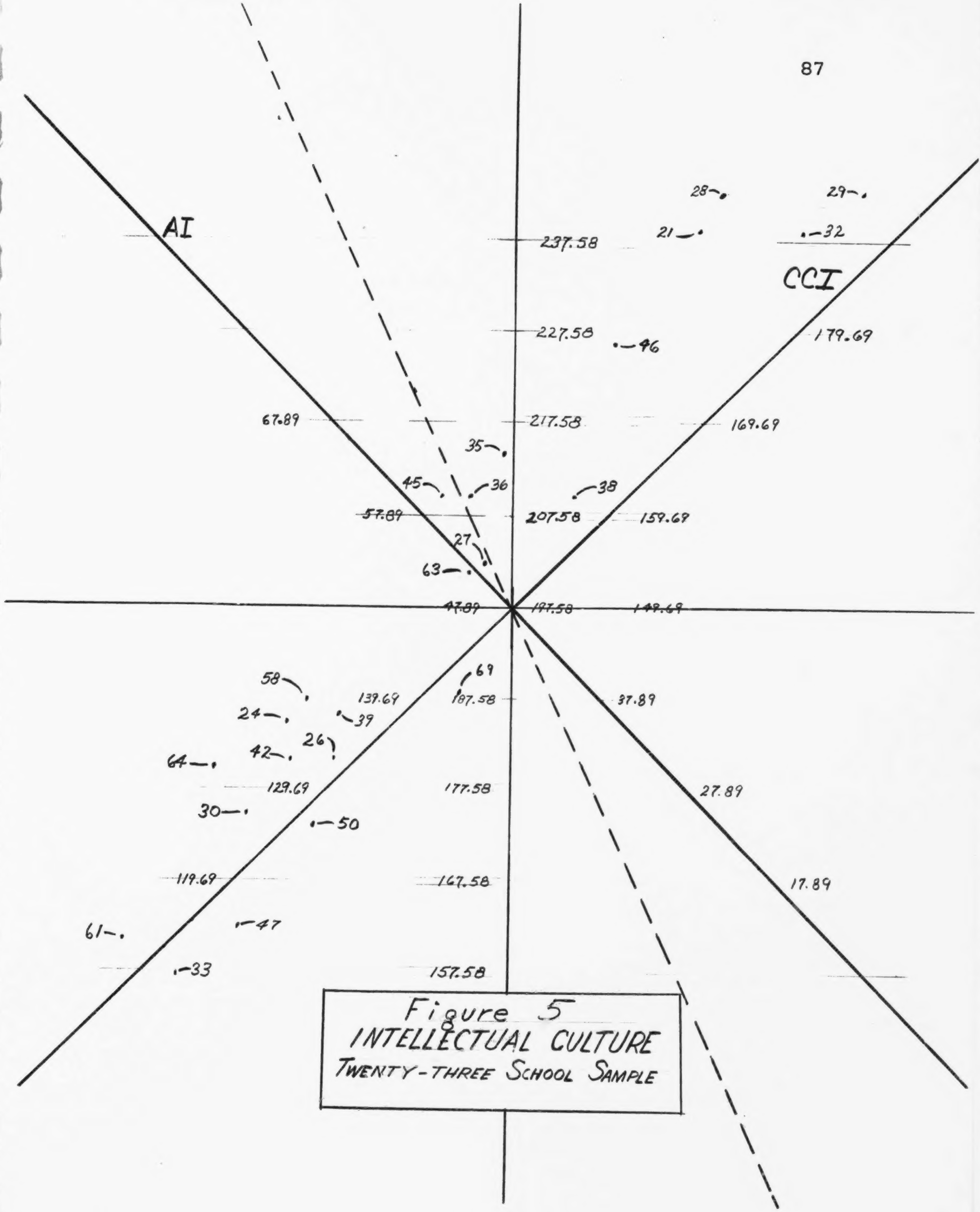

Figure 5
INTELLECTUAL CULTURE
TWENTY-THREE SCHOOL SAMPLE

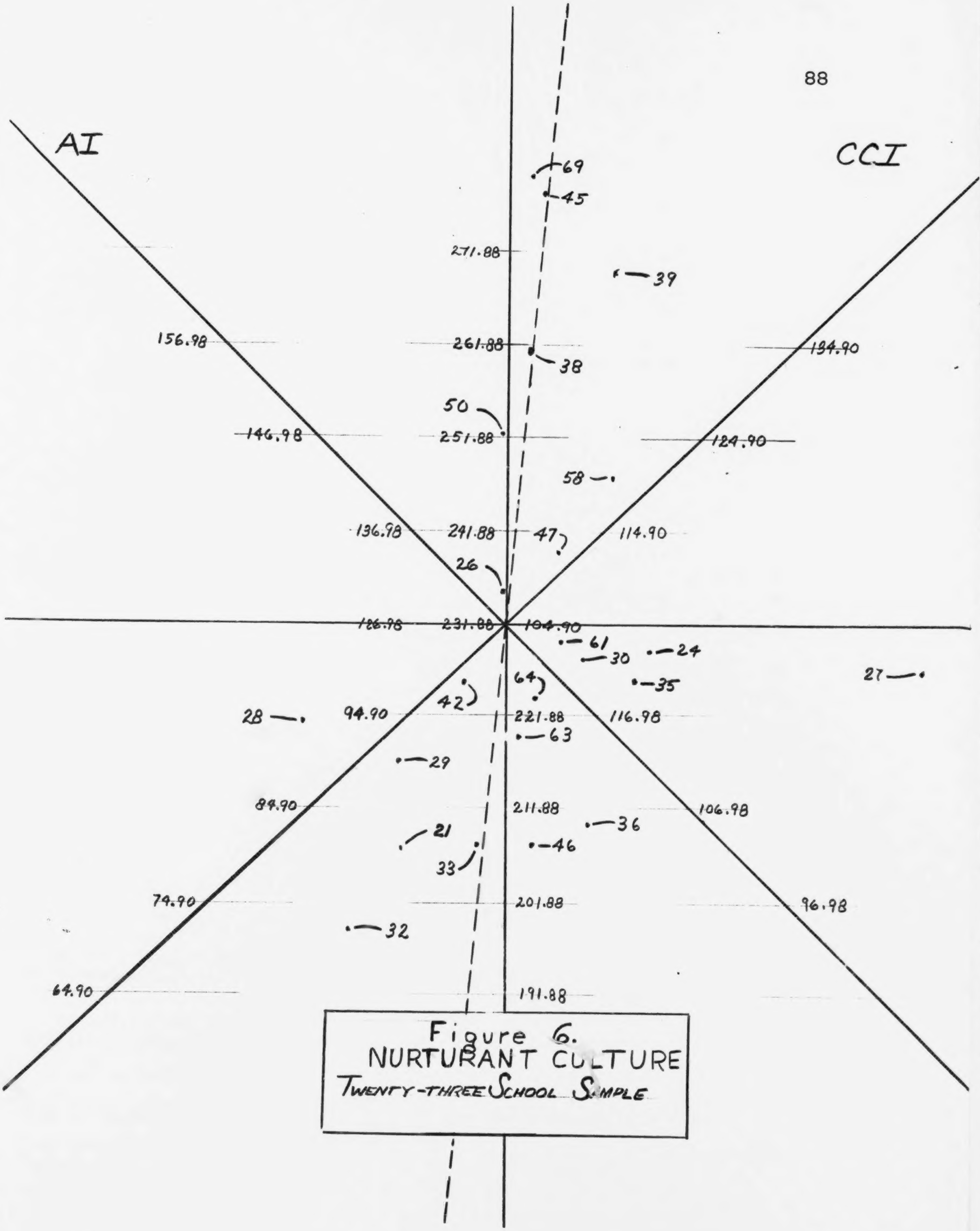

Figure 6.
NURTURANT CULTURE
TWENTY-THREE SCHOOL SAMPLE

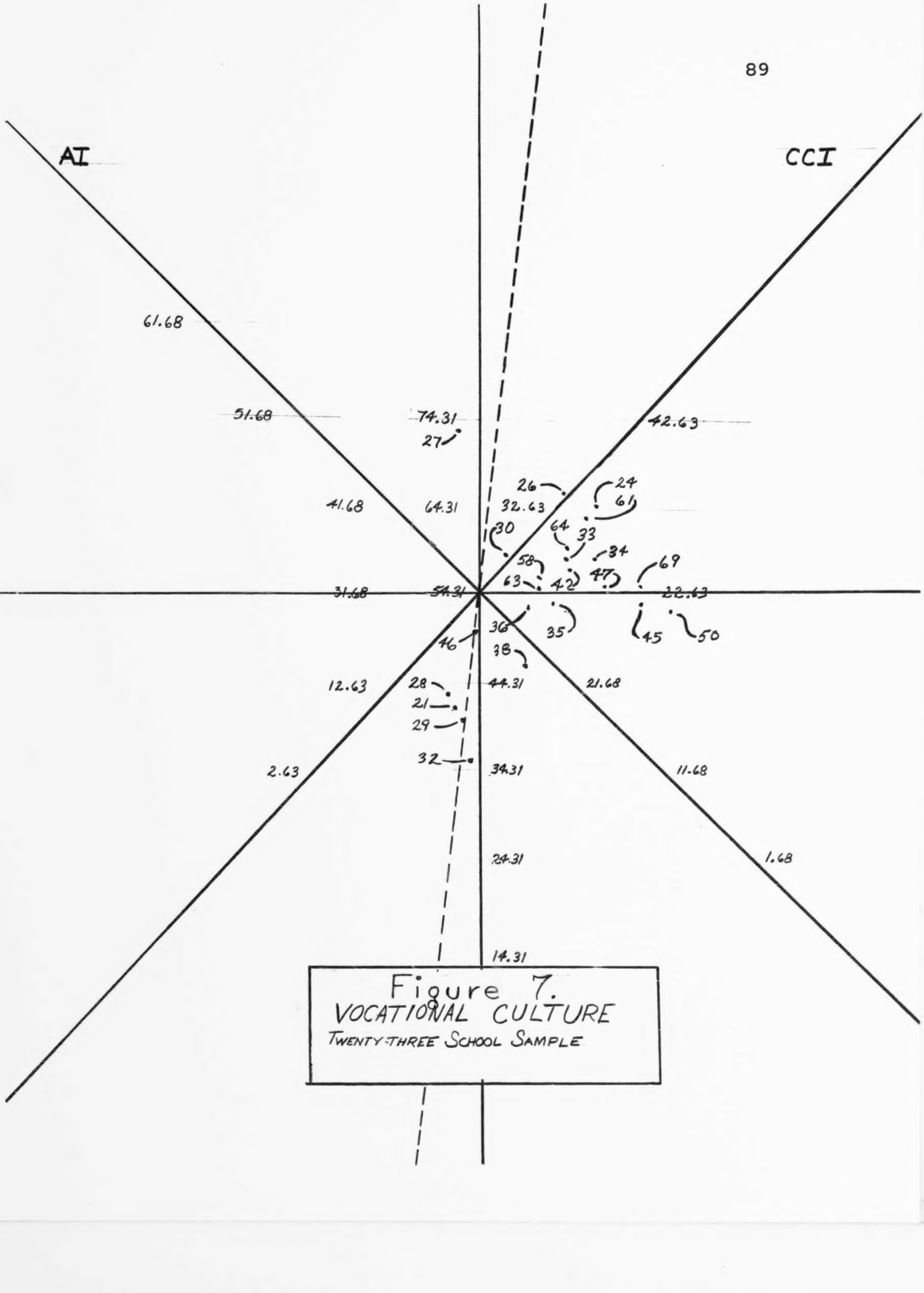

Figure 7.
VOCATIONAL CULTURE
Twenty-three School Sample

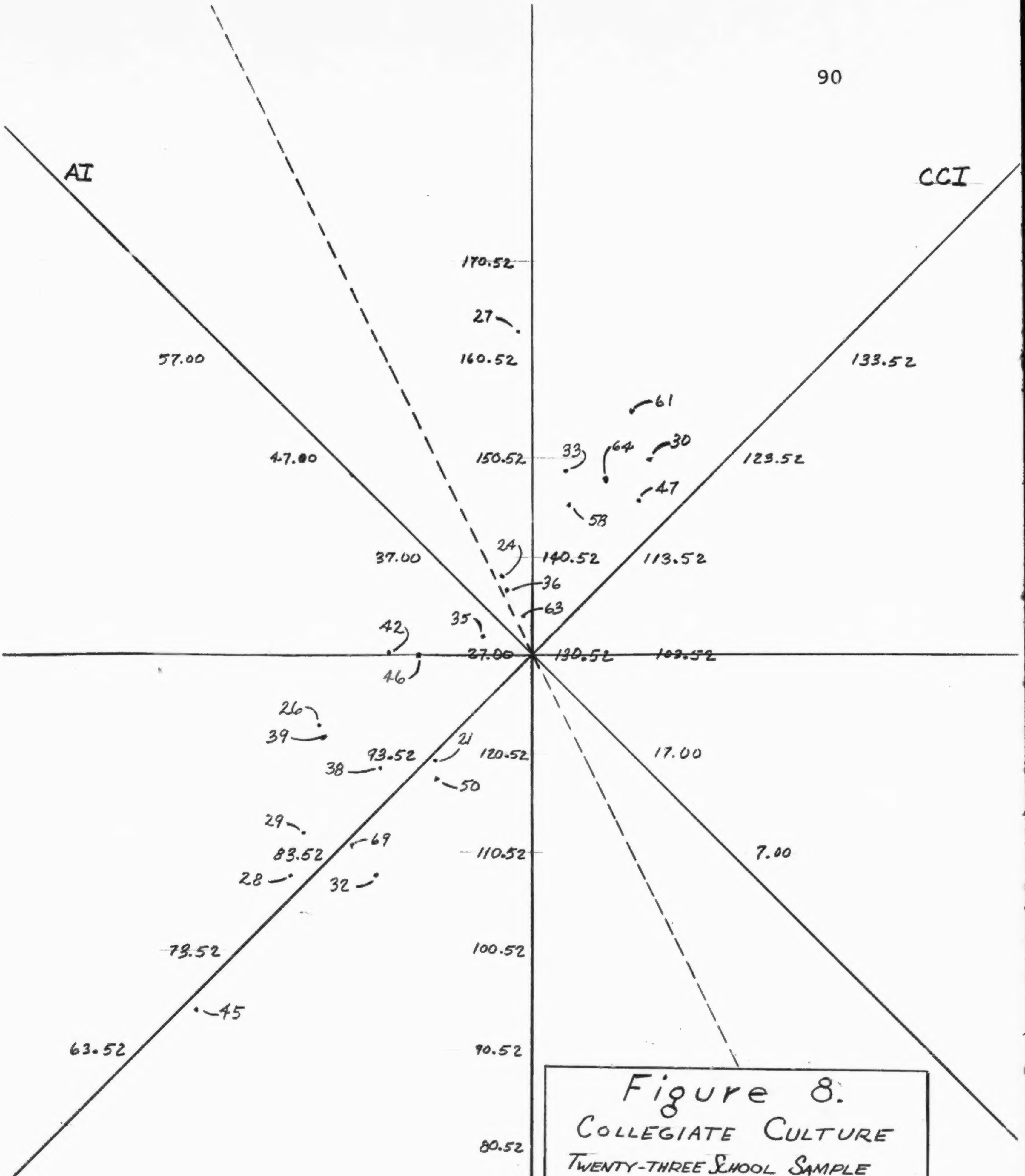

Figure 8.
COLLEGIATE CULTURE
TWENTY-THREE SCHOOL SAMPLE

The point at which they cross is the mean score for the sample. The AI and CCI lines intersect at points corresponding to their theoretical contribution. This point was obtained by dividing the score into AI and CCI contributions on the basis of their importance in determining the maximum possible score. This was done by dividing the total possible AI contribution by the total possible score. The result, the AI proportion, was subtracted from 1, yielding the CCI proportion. The dotted line which passes at an angle through the plot represents a theoretical score line based on the relative contribution of the two instruments to the total score. Each of the twenty-three schools has been plotted by using an identification number that may be found in Table 3. The position of a particular school on a cultural dimensions may be obtained by moving horizontally from the point representing it to the culture score continuum, and reading the value. If orthogonal axes are constructed from the point to the AI and the CCI continuums the contribution of each instrument to the total score is obtained by reading the appropriate values. By noting the location of a school on a culture dimension the contributions from the personality characteristics of the students and the institutional characteristics may be observed as well as its relationship to other institutions in the sample.

Figure 4 represents the Self-Expression culture. The schools at the upper end of the distribution are the familiar independent liberal arts colleges. Low scoring schools are the denominational institutions.

Figure 5 represents the Intellectual culture. The independent liberal arts colleges which score at the high end of this distribution have nearly the same scores on the personality components as schools whose scores for the total dimension are considerably lower. These low scoring colleges have students with the same kinds of personality characteristics but the difference in standing on the total culture is attributable to the institutional environment. For the Intellectual culture the institutional components are of greater importance in differentiating between schools than the characteristics of the students.

Schools at the upper end of the Nurturant culture (see Figure 6) are small denominational colleges. The high scores are based on extreme values for both personality and institutional characteristics. The schools at the lower end of this dimension are the independent liberal arts colleges.

Figure 7 represents the Vocational culture. The schools at the lower end of this distribution are the liberal arts colleges where the Intellectual culture is seen as dominant.

The Collegiate Culture shown in Figure 8 is dominant at universities and at one denominational school. The low scoring schools are the remaining denominational colleges.

The graphs permit the comparison of institutions on the basis of the dimensions resulting from the analysis reported in the present study. This type of data can be related to other institutional characteristics as well as to material comparing institutions with each other.

Another use of examining total scores in terms of the relative contribution of the AI and the CCI components may be found in Figures 9-13. The thirty-eight students in the sample from Antioch College were plotted with the total Antioch distribution as the base. Within the Antioch sample a noticable spread occurs on most scores, although if viewed against the total sample the spread would be not so exaggerated. The Antioch students would, if plotted with the distribution base

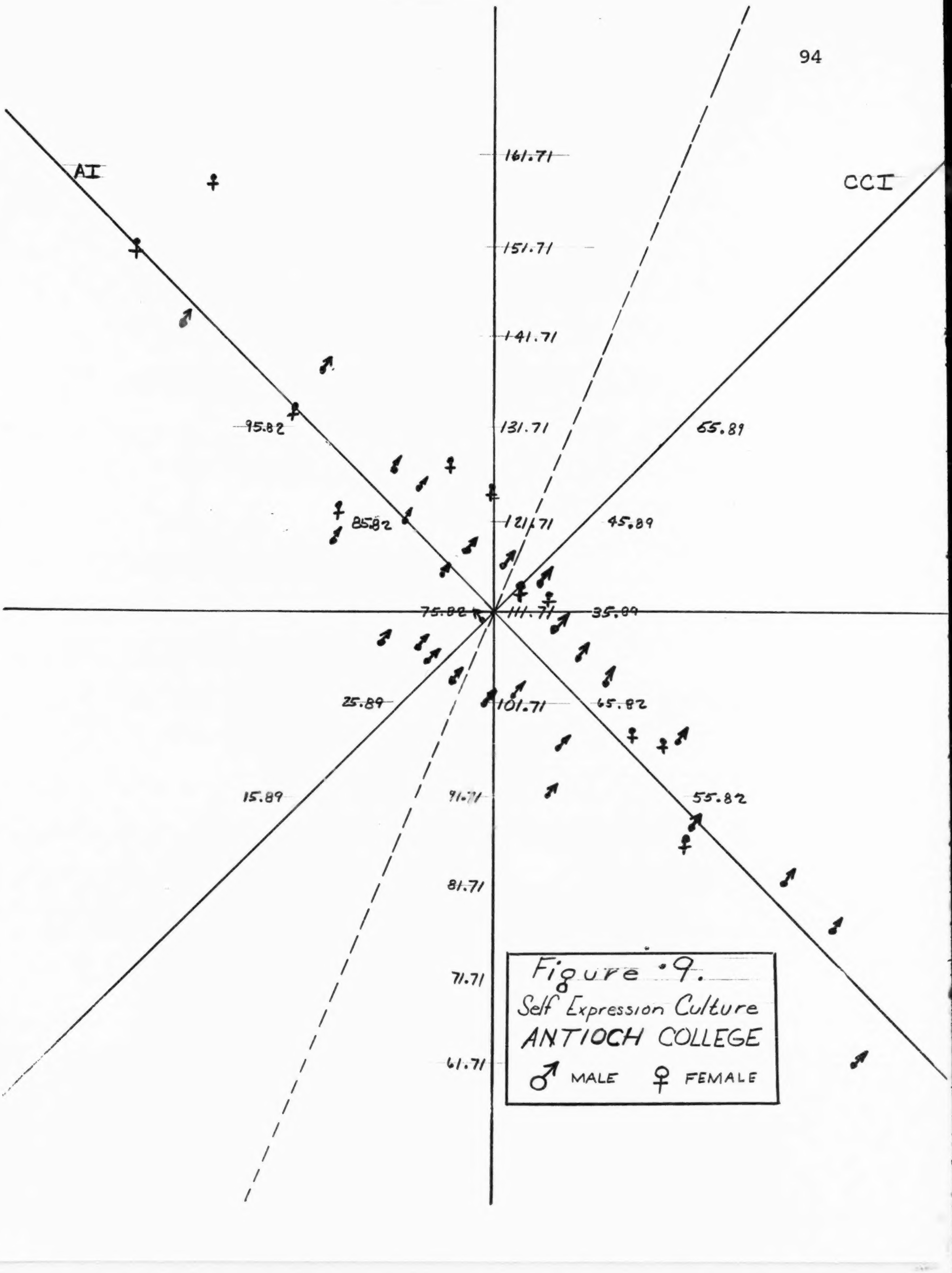

Figure 9.
Self Expression Culture
ANTIOCH COLLEGE

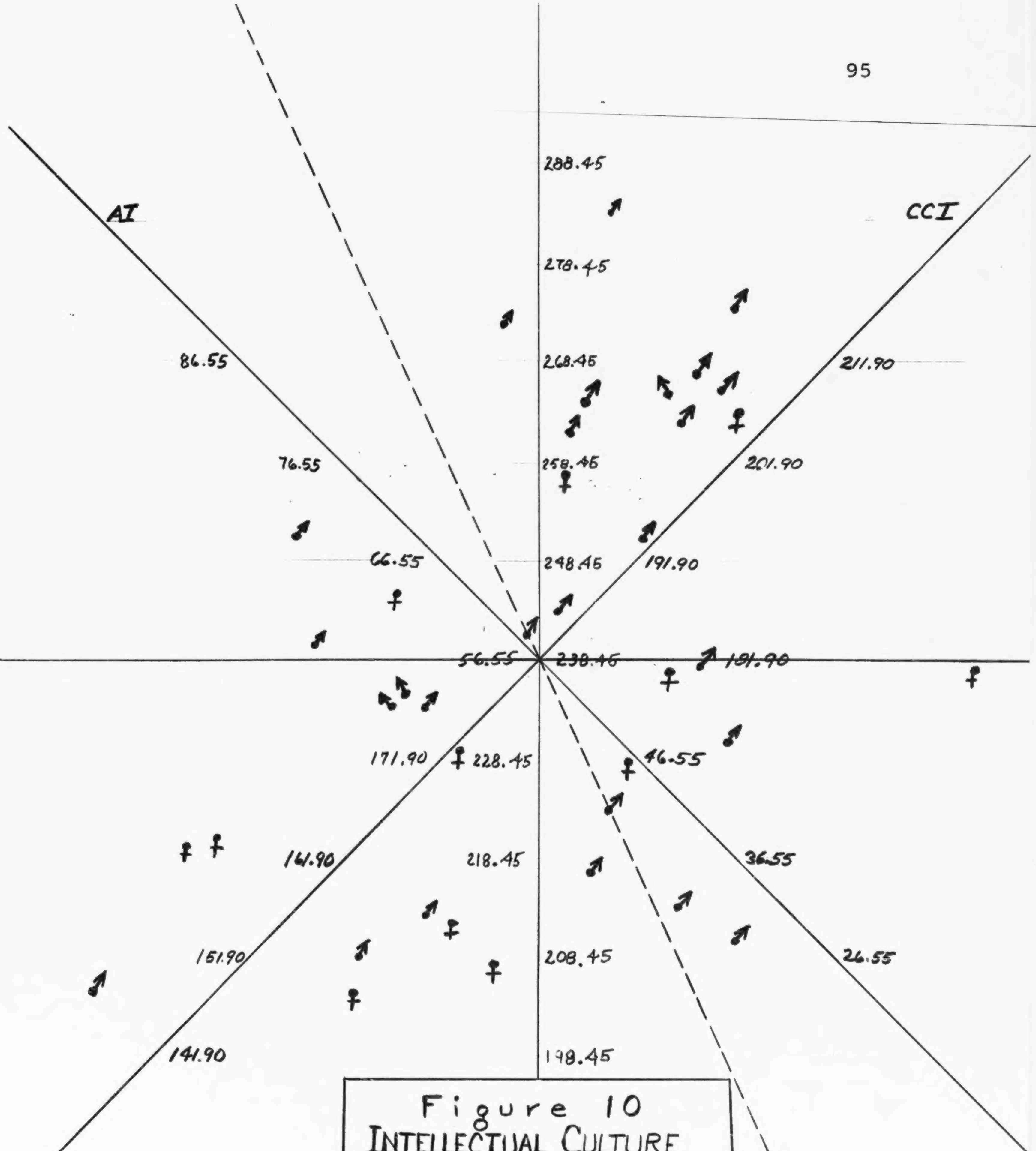

Figure 10
INTELLECTUAL CULTURE
ANTIOCH COLLEGE

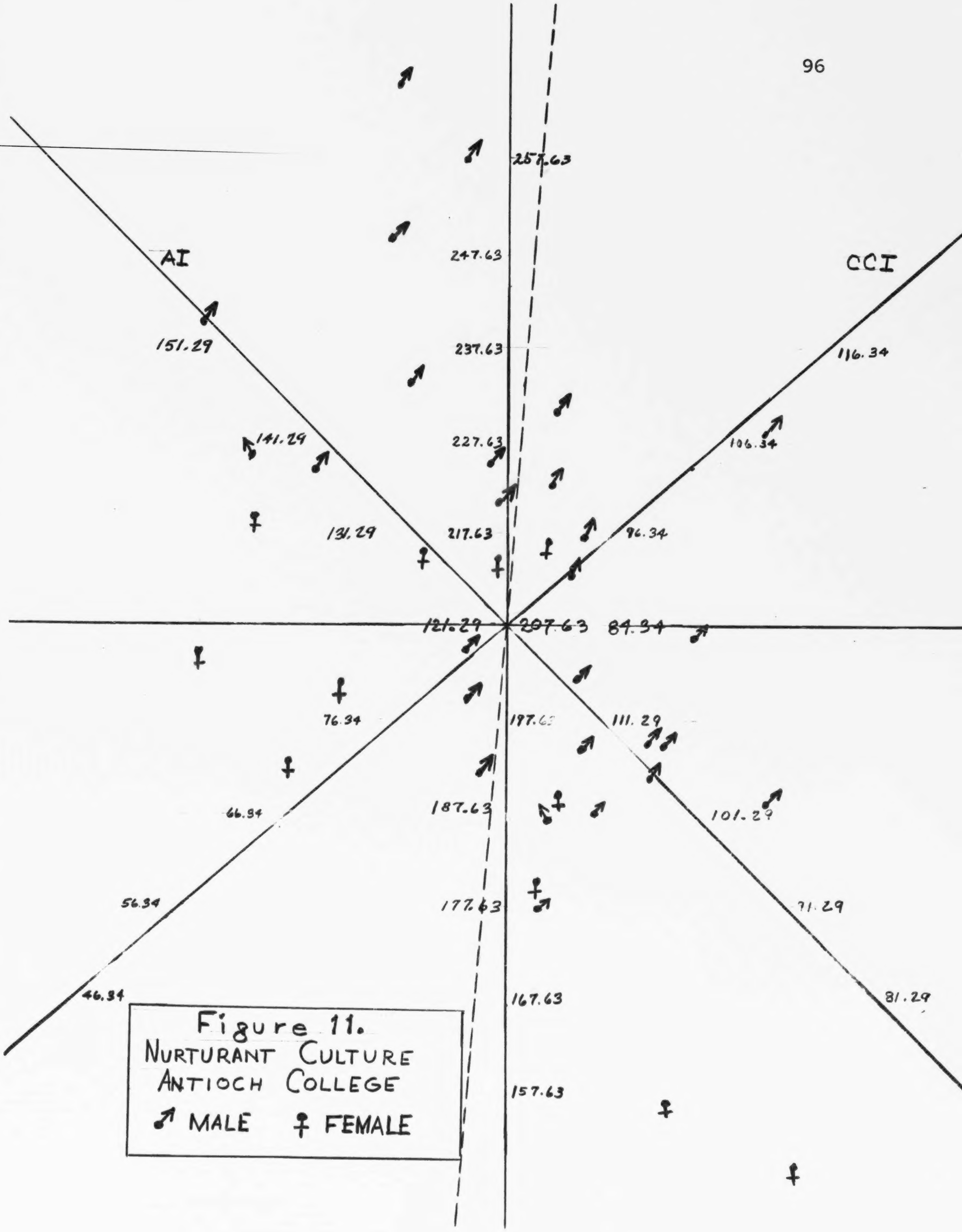

Figure 11.
NURTURANT CULTURE
ANTIOCH COLLEGE
♂ MALE ♀ FEMALE

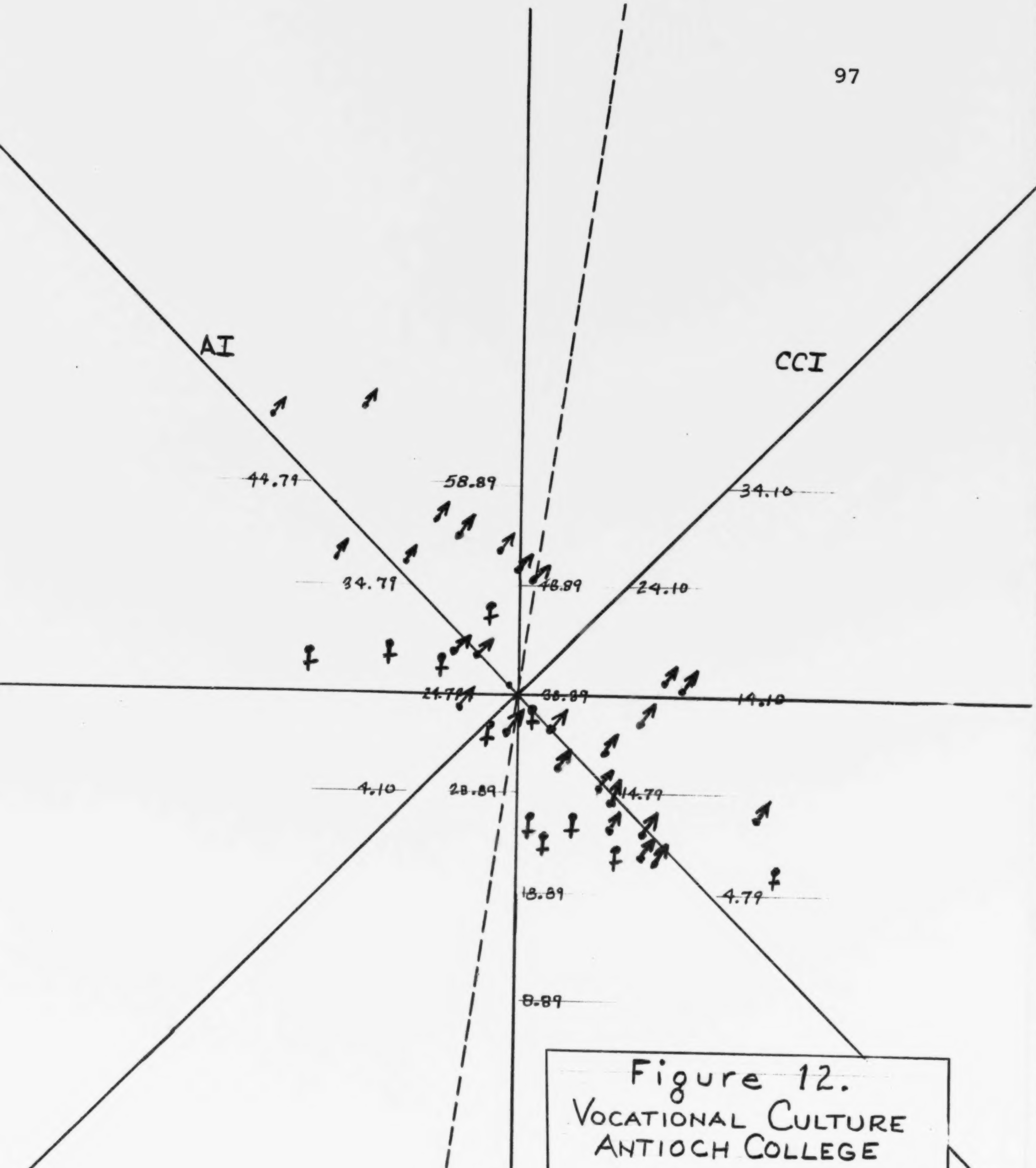

Figure 12.
VOCATIONAL CULTURE
ANTIOCH COLLEGE
♂ MALE ♀ FEMALE

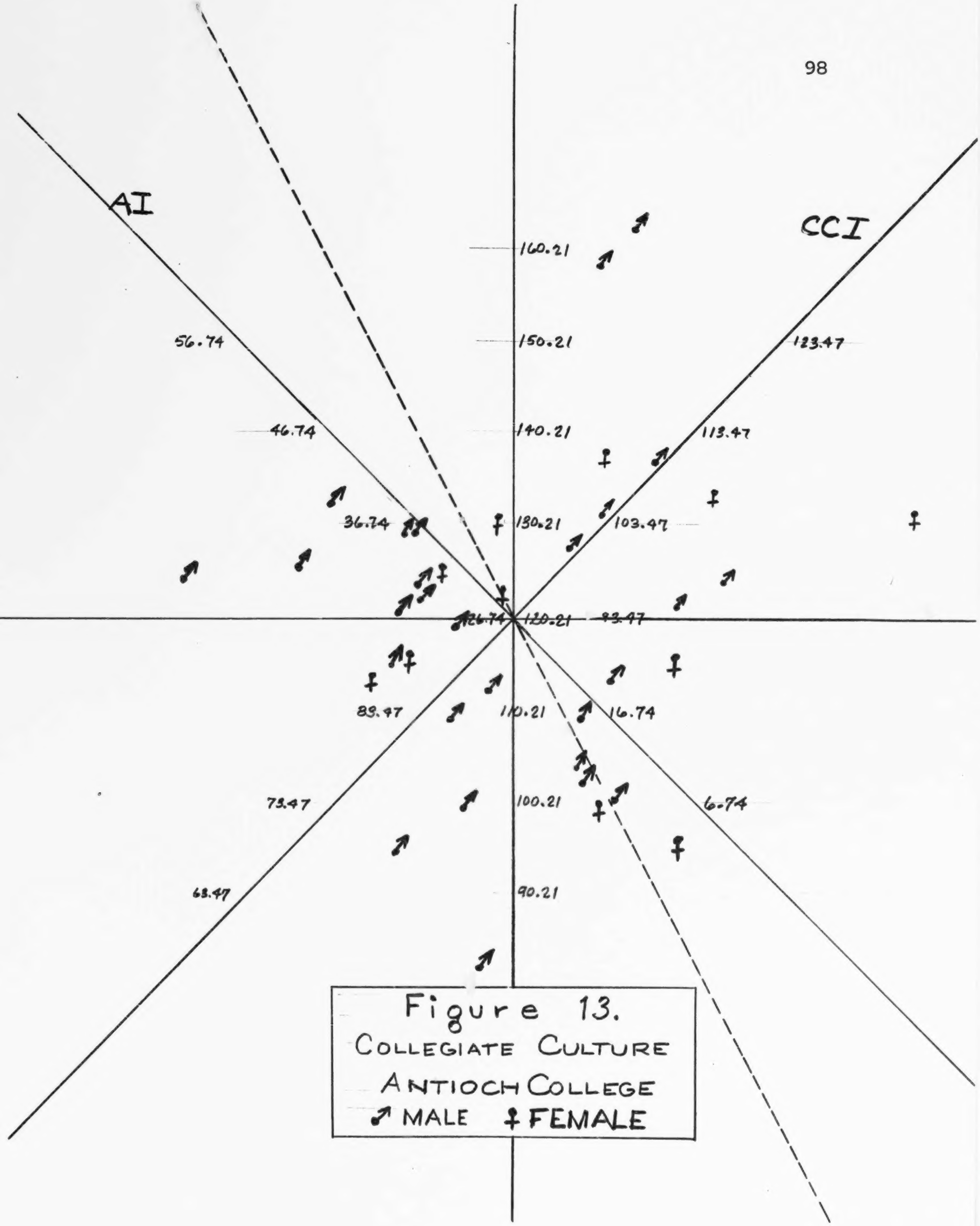

Figure 13.
COLLEGIATE CULTURE
ANTIOCH COLLEGE
♂ MALE ♀ FEMALE

used in Figures 4-8 appear in only the top third of the figures for the Intellectual culture. No student in the Antioch sample falls below the mean for the twenty-three school sample.

For the Self-Expression culture the Antioch students appear to be distributed in nearly the same way as the twenty-three colleges in the sample. They lie along the same environmental component, and vary only in terms of student personality needs.

The pattern for the Nurturant culture is similar to that for the Intellectual culture, with the direction of score magnitudes reversed. Only a few students exceed the mean for the entire distribution. The Antioch students are well distributed on the Vocational culture dimension, although most of them fall below the mean for the twenty-three school sample.

The Collegiate culture pattern for the Antioch students presents a scattered picture, with total scores coming, with no definite pattern, from the personality and environmental components. This is not the case for the twenty-three school sample, where personality characteristics are very similar, and variation is due to the environmental aspect of the factor.

Using the data as presented here two types of comparisons may be made. First, institutions may be compared and differentiated on the basis of those elements dominant at a particular institution or, in the case of the university, among its subdivisions. The second use is found in the comparison of individuals within a particular institution. This material provides some information about the relationships of students and their colleges. It is, however, as far as the present study can go, given the limitations imposed by the data presently available.

CHAPTER VI

CONCLUSIONS

The research reported here raises at least as many questions as it answers. First, some of the answers. The present study was designed to explore the relationship between personality and environment, particularly for the case of students and colleges. Independent descriptions of personality and intellectual characteristics were related in such a way as to produce joint dimensions. The dimensions, described as college and university cultures, provide a means for distinguishing between institutions and between students. The culture dimensions may also be viewed in terms of the relative contributions of the personality and environmental components, since the same culture score may be achieved by an infinite number of combinations of the two variables.

An interesting comparison may be made between the results of this study and the typology of student cultures suggested by Trow (1960). Trow differentiates between the collegiate, academic, vocational and nonconformist cultures.

Trow states that higher education in this country is represented by this typology. The collegiate culture consists of the football and fraternity campus world where the students maintain an acceptable academic standing and where strong institutional loyalties are built. There is an indifference to the intellectual demands of higher education. The academic culture represents a student identification with the intellectual activities of faculty members and a premium is placed on academic commitment. Loyalties are more likely to be to particular faculty members than the institution. The non-conformist culture consists of those students identifying with ideas rather than their institution or its faculty members. Students are likely to be aggressively nonconformist. The volcational culture is one oriented to preparation for a particular task that is usually the path of upward social mobility for the students involved.

Trow's nonconformist culture is like the Self-Expression culture that has been described in the present study. The Intellectual culture noted here is similar Trow's academic culture. The vocational cultures and the collegiate cultures from both studies are alike. The Nurturant culture noted in the present study has no counterpart in Trow's scheme.

This is probably due to the nature of the framework from which Trow derived his typology. The basis for Trow's constructs are the presence or absence of ideas, and the presence or lack of institutional commitment. This particular set of elements does not provide for a variation such as that noted in the Nurturant culture and found in this study, to be typical of denominational colleges.

Another important difference between the present study and Trow's is the basis for the development of the culture distinctions. The present cultures are based on quantitative data from a sample assumed to represent the forms of institutional organizations currently found in American higher education. Trow derived his material from ad hoc conceptualizations of students and colleges.

That personality and environment are related is taken for granted by most social scientists, and many of them act as if joint dimensions exist. From the present study it may be concluded that they do, and that they may be measured, at least for the case of students and colleges. This conclusion is not without some reservations. The first deals with the sample which was the basis for this study. It was, as mentioned earlier, collected over the past few years in the course of continuing research on college students. It is possible that things that were true when the data were collected are not true now. A second limitation of the sample is the manner in which it was collected. The data were solicited from a number of institutions, and were obtained with the aid of a friendly staff member, or in the case of several institutions, through self-studies undertaken by colleges. There is no reason to suspect that the responses of students are distorted, or that they represent an unusual group of students at any particular location, but this possibility does exist. The institutions included in the present sample were selected according to the criteria described in Chapter IV. This is not an ideal sampling procedure but it does provide a wide range of both student types and institutional characteristics.

The research was originally stated in terms of Lewin's $B = f(P,E)$ statement, with the intention of linking the P and E aspects. This part has been done. The existence of joint personality and environmental components has been shown. The use of these dimensions to differentiate between institutions has been demonstrated. What are the implications of these differences?

A number of educators have taken the position that what makes a particular college distinctive is the high caliber of the students. Students combining high aptitude and intellectual aggressiveness have been thought to be all that is necessary for quality educational processes to be successful (McConnell & Heist, 1959; Heist, 1960). Yet the data reported here show that in the intellectual area there are a number of institutions with students showing high levels of intellectual and motivational personality characteristics, yet the culture score in the intellectual variable is not necessarily high. The differences in over-all quality of education must be attributed to institutional climate since the students are very similar. Intellectually interested students would have a difficult time pursuing their interests in an atmosphere where students are constantly administered to, and where the testing of student ideas is effectively discouraged through administration action. Stern has noted that the institutional component must be considered as a source of good education--the entire blame or rewards are not for the students alone (Stern, 1963a).

These relationships also vary within an institution, as shown by the data for Antioch College. What are, for instance, the implications for students who describe their cultural setting in various forms? The present study provides a way for distinguishing between variations in descriptions, but can provide only some suggestions regarding the behavioral implications of this type of question.

If behavior is, as Lewin stated, related to the consideration of personality and environment, the selection of a behavioral criterion to be included in his statement represents the next stage in research continuing with the strategy used here. Predictions of college success on the basis of the relationship between personality and environment should be vastly improved from its present level. Predictions as to the outcome of particular kinds of organizational experience, given that the environment may be characterized in a fashion like that used here would be possible.

For institutions caught up in change, whether encouraged by internal or external pressures, there is information available which should help anticipating the consequences of change. That the characteristics of students and those of institutions are so clearly linked is an important idea when considering change in only one aspect of the college culture.

Away from the college setting, individuals and their environment are interacting. The model that is used here is not inappropriate to the study of behavior in other contexts. There is no reason why the type of research suggested here could not proceed in other areas, furthering the understanding of the relationship between the individual and society.

The ultimate question for social scientists is why do human beings behave as they do? The answer must be found in the search for the determinants of behavior. It is hoped that the material presented here is a step in that search.

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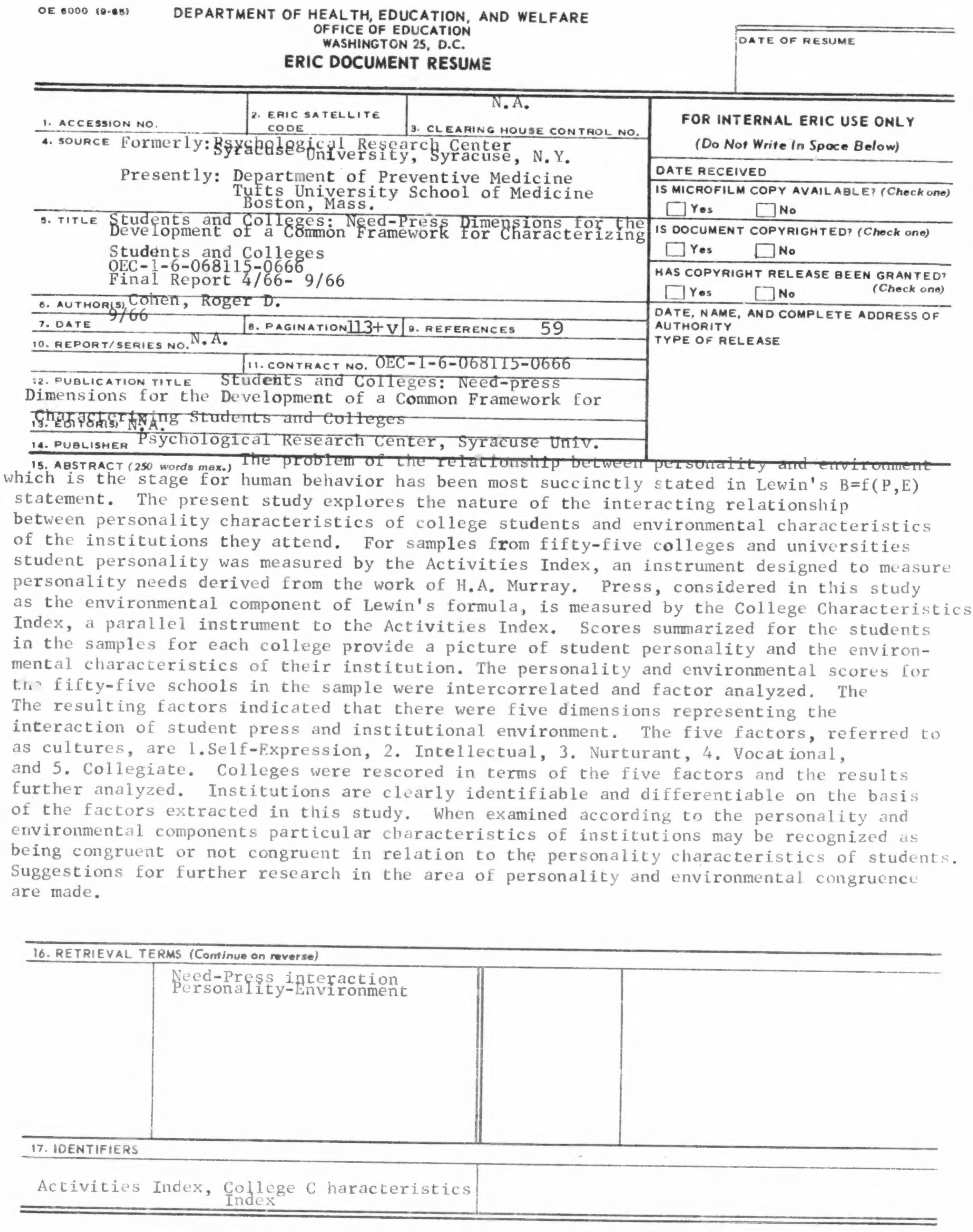

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15. ABSTRACT (250 words max.) The problem of the relationship between personality and environment which is the stage for human behavior has been most succinctly stated in Lewin's B=f(P,E) statement. The present study explores the nature of the interacting relationship between personality characteristics of college students and environmental characteristics of the institutions they attend. For samples from fifty-five colleges and universities student personality was measured by the Activities Index, an instrument designed to measure personality needs derived from the work of H.A. Murray. Press, considered in this study as the environmental component of Lewin's formula, is measured by the College Characteristics Index, a parallel instrument to the Activities Index. Scores summarized for the students in the samples for each college provide a picture of student personality and the environmental characteristics of their institution. The personality and environmental scores for the fifty-five schools in the sample were intercorrelated and factor analyzed. The The resulting factors indicated that there were five dimensions representing the interaction of student press and institutional environment. The five factors, referred to as cultures, are 1.Self-Expression, 2. Intellectual, 3. Nurturant, 4. Vocational, and 5. Collegiate. Colleges were rescored in terms of the five factors and the results further analyzed. Institutions are clearly identifiable and differentiable on the basis of the factors extracted in this study. When examined according to the personality and environmental components particular characteristics of institutions may be recognized as being congruent or not congruent in relation to the personality characteristics of students. Suggestions for further research in the area of personality and environmental congruence are made.

16. RETRIEVAL TERMS (Continue on reverse)
Need-Press interaction
Personality-Environment

17. IDENTIFIERS
Activities Index, College Characteristics Index

Figure 3. ERIC Document Resume